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PSYCHOSOMATIC MEDICINE

EXPERIMENTAL AND CLINICAL STUDIES

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PURPOSE: The aim of PSYCHOSOMATIC MEDICINE is to encourage and bring together studies which make a contribution to the understanding of the organism as a whole, in somatic and psychic aspects. The field to which PSYCHOSOMATIC MEDICINE is devoted is rapidly assuming importance in medicine and the related sciences. The traditional body-mind dichotomy, while now less present in medical thinking, is not eradicated from language. Expressions which, during the last decade, have gained increasing prominence in medical literature, such as the organismal theory, the patient as a whole, psychosomatic problems, psychophysiology, psychobiology, were all attempts to avoid the artificial division of the psychological from the physiological. It is now realized that the major problem is not to find the term or label to indicate the essential unity of the organism, or to engage in philosophical discussions about monism, dualism or parallelism, but to develop practical methods for dealing clinically and scientifically with the organism as a whole. Although the organism is a unit, fundamentally different methods have been developed for the observation and management of the psychic and somatic functions. This fact is the real reason for the use of the term psychosomatic, not any difference of opinion about the essential nature of the organism.

The ability to deal with the psychic aspect of an illness, or with the patient as a person, has been called the art of medicine in contradistinction to the science of medicine. But this association of ideas has tended to preserve a dichotomy. Most physicians would agree that there is an art and a science for dealing with physiology as well as psychology. The fact that studies relating to them tend to be isolated from each other in our scientific literature constitutes the reason for this publication.

Psychosomatic medicine is not a medical specialty, parallel with internal medicine or psychiatry, but an approach which might be applicable to almost any medical, psychological or physiological problem. The consequence is that nearly anything the Journal publishes might be suitable for one or another of the specialized scientific journals, yet its suitability for this Journal depends not only on its scientific excellence but also upon its pertinence to some specific issue involving observations or experiments on both personal reactions and organic reactions.

SCOPE: The investigations published in this Journal will deal primarily with phenomena observed concurrently from somatic and psychic aspects rather than from either one alone. The scope therefore will include appropriate experimental studies of animal and human behavior, and well-controlled clinical studies of children and adults. Pertinent examples are: investigations of experimental neuroses, of frustration, of physiological changes accompanying emotion, of vegetative and hormonal disturbances, and of psychiatric aspects of general and specific emotional problems.

The Editors are not disposed to accept manuscripts which present purely psychiatric material without observations and data relative to physiological events, or material relating to any of the specialties of internal medicine which is not accompanied by sufficiently adequate observations to throw light on the psychosomatic mechanisms involved.

The Journal includes articles containing reviews of literature in the field of the medical and research specialties.

Reviews of articles and books relating to this field will also be published.

MONOGRAPHS: To meet the increasing need for publication of experimental data resulting from longer studies, monographs independent of the Journal itself will be published as occasion requires.

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A PSYCHOSOMATIC STUDY OF HYPOGLYCAEMIC FATIGUE *

FRANZ ALEXANDER, M.D., AND SIDNEY A. PORTIS, M.D.

About a year ago we began a psychosomatic study of a well defined group of psychoneurotic patients whose psychological condition appeared in association with a peculiarity of their carbohydrate metabolism manifested by a flat intravenous glucose tolerance test as found in cases of hypoglycaemia. Psychologically these patients are characterized by what best can be described as an asthenic syndrome. The outstanding feature is apathy, a loss of zest, a general let down feeling of aimlessness, a repulsion against the routine of every day life, be it occupational activities or household duties. Seldom is this apathy connected with anxiety or a pronounced depression. Another constant feature is fatigue, chronic or appearing in acute attacks. The fatigue has certain fairly constant features. It is present as a rule on awakening, slightly more severe in the mid-morning, temporarily improved after luncheon, and most marked in the mid-afternoon. There is practically always a complete relief after the heavy evening meal. The patients may awaken with a severe headache which is also manifest during the mid-afternoon fatigue. Along with this more chronic fatigue there may be acute attacks of extreme weakness, tremulousness, sweating, and vertigo. At times a feeling of "light-headedness" may be manifest. The acute attacks may be associated with anxiety of fainting or free floating anxiety.

Somatically the condition is characterized by a flat intravenous glucose tolerance test. The fasting sugar level in the blood may be normal, somewhat low, or definitely low.

Our study had two objectives: (1) To establish the relationship between the psychological syndrome and the changes in the carbohydrate metabolism; in particular to find out whether the psychological syndrome is a secondary result of the changes in the carbohydrate metabolism or the metabolic changes are produced by an emotional disturbance, or—which we thought most probable—whether there is a reciprocal inter-relationship between metabolic changes and emotional factors. (2) To work out a combined psychotherapeutic and somatic approach for the treatment of such cases.

In the last 10-15 years spontaneous functional hypoglycaemia has been described by various au-

thors. In these studies, as far as the psychological manifestations have been considered, the authors' interest was to describe the psychological effects of the hypoglycaemic state. After the introduction of insulin shock therapy these psychological sequelae of hypoglycaemia became generally known, and, therefore, we may here refer to the summaries of observations dealing with the psychic manifestation of hypoglycaemia contained in the articles of Joseph Wilder (7), Thomas A. C. Rennie and John Eager Howard (4), John Romano and Gaylord P. Coon (5), and Harold E. Himwich (2). For example Wilder mentions in minor hypoglycaemic attacks, apart from the bodily symptoms (fatigue, hunger, perspiration, tremor), psychological symptoms such as mild dullness of consciousness, weakness in concentration, abulia, and depressive and anxious moods; in medium attacks, mannerisms, changes of speech, double vision, ataxia ("striopallidary symptoms"). John Romano's and Gaylord Coon's patient, who was suffering from an adenoma of the pancreas, showed in his hypoglycaemic attacks confusion, disconnected movements and uninhibited emotional behavior.

The most recent review of the literature of this problem, which has been attracting more and more attention, has been published by Harold E. Himwich (2). Himwich classifies the psychological sequelae of hypoglycaemia in five definite successive stages and ascribes this sequence to the different metabolic rates in the various regions of the brain, the highest being found in the newest portions and each succeeding part possessing a lower rate. The first, or cortical phase, is characterized by sweating, salivation, muscular relaxation, and tremors accompanied by gradual clouding of consciousness. The second, the subcortico-diencephalic phase, appears in the form of motor restlessness, manifested by primitive movements such as snarling, grimacing, and grasping. In the third, the mesencephalic phase, tonic spasm can be observed and the Babinski reflex becomes positive. In the fourth, the premylencephalic phase, the tonic spasms become mostly extensor spasms. The phase resembles the picture of the decerebrated dog of Sherrington. In the last, the myelencephalic phase, the patient is found in a deep coma. There is a predominance of parasympathetic tonus. These phases can be best

* Presented before the meeting of the Council on Brief Psychotherapy, Chicago, January, 1944.

observed during the insulin treatment of schizophrenia.

In the great majority of cases of functional hypoglycaemia only the first phase can be observed and its most conspicuous clinical manifestation is a feeling of weakness, tremulousness, sweating. Anxiety may or may not be present. Our studies include a number of cases in which this acute syndrome was lacking and only chronic apathy, aimlessness and fatigue were present, similar to a group of patients described earlier (1929) by L. Szondi and Heinrich Lax (6). Their careful clinical study is most pertinent to our own investigation. They established beyond doubt the coincidence of a flat glucose tolerance curve with a neurotic state which in the older psychiatric literature is usually called neurasthenia, characterized by fatigue, prostration and apathy often combined with sleepiness, headache, palpitation, vertigo, anxiety, tremulousness, perspiration, and vasomotor lability. This syndrome can be produced by excessive insulin dosage and is also the classical sign of neurasthenia.

To begin with the authors established the average blood sugar level in 26 normals and 31 neurasthenics and the average values were identical. The authors' conclusion is that *neurasthenics are not hypoglycaemic individuals*. They also emphasize that the hypoglycaemic syndrome can be observed in people with a high blood sugar level (0.20%) and on the other hand the symptoms of hypoglycaemia may be absent at very low blood sugar levels. Hence the hypoglycaemic symptoms cannot be explained from low blood sugar concentration and another phase of the carbohydrate metabolism must be disturbed. To find this was the authors' aim. They studied 31 neurasthenics and a group of 26 normals. The sugar tolerance of these groups was determined by giving 50 grams dextrose per os and the blood sugar was determined $\frac{1}{2}$ hour, 1 hour, and 2 hours after the intake of sugar. The average rise was: in normals 69%; in neurasthenics 31%. The range of the rise in the normals was from 56% to 111%; in the neurasthenics 0.4% to 50%.

A similar relationship was found between a group of 24 neurasthenic plus hypogonadic patients compared with 34 non-neurasthenic hypogonadic patients. The relationship was again similar but even more pronounced between a group of non-neurasthenic hyperthyroid patients as compared with a group of hyperthyroid patients who at the same time suffered from neurasthenia.

On the basis of these studies the authors postulate a close connection between the asthenic syndrome fatigue-apathy-hypotheny and a flat sugar

tolerance curve. They consider a flat curve as pathological and postulate that in neurasthenic individuals the regulatory mechanism of the alimentary glycaemia is destroyed. Their final conclusions are: (1) the most conspicuous symptoms of neurasthenia, the so-called asthenic syndrome, is analogous with the hypoglycaemic syndrome. (2) The asthenic (neurasthenic) symptoms are not in a causal relationship with hypoglycaemia because neurasthenics do not show hypoglycaemia. (3) The asthenic syndrome appears together with a pronounced flat sugar tolerance curve. In the neurasthenics the test raises the blood sugar only 31% in average, in contrast with a 70% raise in normals. The flat tolerance curve is a pathognomonic concomitant of the asthenic syndrome. The presence of neurasthenic symptoms in other organic cases also appears together with a flat tolerance curve.

As stated above, the earlier literature, as far as psychological factors were considered, dealt exclusively with the influence of hypoglycaemia upon the emotional life. In 1942 Thomas A. C. Rennie and John E. Howard (4) were the first to describe the influence of emotional factors upon the development of hypoglycaemia. They have studied seven patients of which six displayed a psychiatric condition which the authors call "tension depression" characterized essentially by a motor tension "but occurring also with states of depression." These cases showed flat glucose tolerance curves during the symptomatic period. Three of these cases were observed again after their emotional difficulties had been resolved and they showed normal glucose tolerance curves. The authors came to the conclusion that the hypoglycaemia is secondary to the psychiatric disorder since it disappears with management of the psychiatric condition.

Our first prompting to this investigation came during the psychoanalytic treatment of a 45 year old married woman who was suffering from periodic attacks of diarrhea, headaches, and overwhelming fatigue. (Patient 1.) The patient's diarrhea reacted favorably to psychoanalytic treatment but the fatigue, which the patient ingeniously called her "pernicious inertia," resisted the psychoanalytic approach more than her other complaints. The patient spent literally the major part of her waking life on a day couch. She dreaded all the efforts of daily life, household duties, charities, social obligations, the visits to and from her children. The only activity she indulged in was voracious reading while lying on her comfortable couch. Suspecting that her fatigue had a physiological basis, particularly those violent, acute attacks of weakness,

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which appeared at physical exertion, one of us made a metabolic study. A flat intravenous glucose tolerance curve was found and on this basis relative hypoglycaemia¹ due to hyperinsulinism was assumed to be the cause, both of her chronic fatigue and acute attacks of weakness and exhaustion. This patient improved rapidly under the atropine and diet management, described by Drs. Sidney A. Portis and Irving H. Zitman in their article, "A Mechanism of Fatigue in Neuropsychiatric Patients" (3) (fig. 1). As seen in fig. 1 the glucose tolerance curve too became normal.

Eight additional cases have been studied, four of which gave opportunity for prolonged observation. The other four yielded primarily anamnestic material, but two of them supplied also valuable therapeutic information. In each of these nine cases the asthenic syndrome was present either in a chronic form of prolonged exhaustion and apathy or in acute attacks of weakness in connection with tremulousness, sweating, and often anxiety. In some cases both types were present. In all the diagnoses, hypoglycaemic fatigue, was made on the co-existence of the clinical asthenic syndrome with a

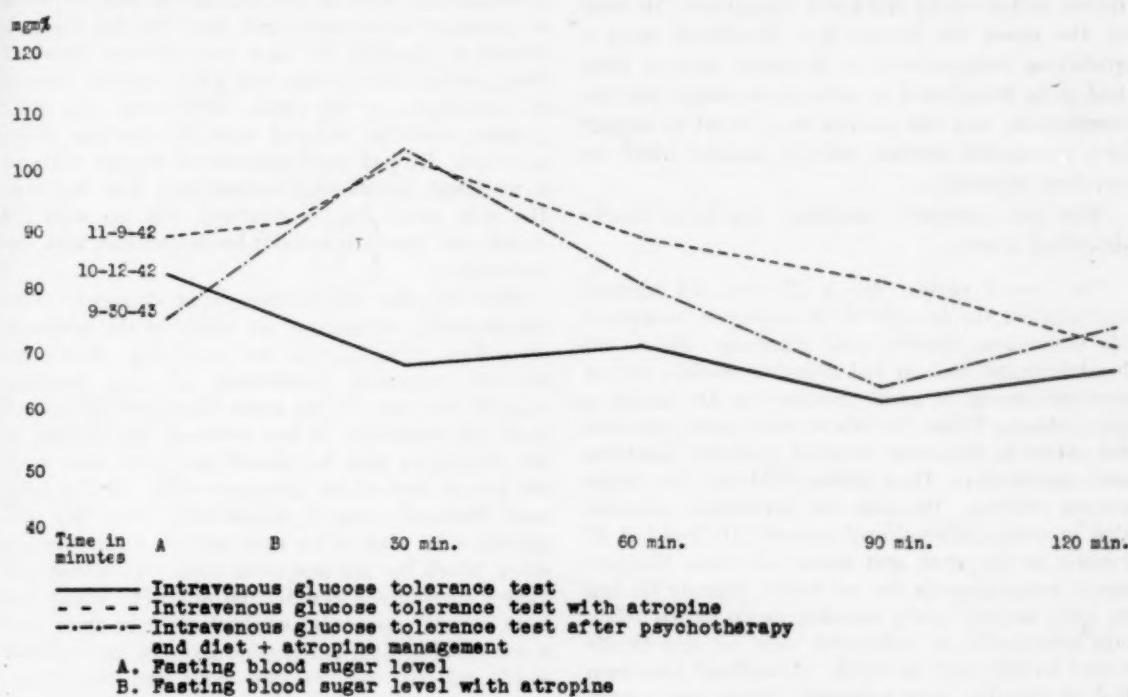


FIG. 1.

We shall not go into a psychodynamic portrayal of this patient (No. 1) as her condition improved before the relationship of her fatigue to psychodynamic factors could be studied in detail. The one outstanding factor which seemed of etiological significance was the patient's complete lack of aim, zest, or spontaneous interest in any activity or in any phase of her life. It was not so much a depression as a condition which could best be described as apathy, an aimless drifting along. The therapeutic success of our combined psychiatric and somatic treatment in this case prompted us to take up more systematically the study and theory of similar cases.

¹ See definition of the term "relative hypoglycaemia" on page 204.

flat intravenous glucose tolerance curve. In every case $\frac{1}{2}$ Gm. of glucose per kilogram of body weight (using 50% solution) was injected after the fasting rate blood sugar concentration had been established. Blood samples were withdrawn $\frac{1}{2}$ hour, 1 hour, $1\frac{1}{2}$ hours, and 2 hours after an intravenous administration of glucose. In a number of cases the test was repeated after an hypodermic injection of 1/75 grain of atropine sulfate. In all these cases under the influence of atropine the previously flat curve assumed a normal quality. (See figs. 1, 2, 4, 7.)

PSYCHODYNAMIC OBSERVATIONS

In none of our psychosomatic studies have we encountered a greater conformity in the psycho-

dynamic constellation in patients suffering from a given psychosomatic disturbance. Without exception in the nine cases, the presenting emotional situation was a lack of zest and interest in whatever activities the patients were engaged; a picture resembling that of a depression, but still different from it in certain respects. Most patients came with the complaint that life had lost all meaning for them, that they lacked an aim in life, that there was a complete absence of zest or interest in their daily activities, whether this was routine office work, teaching, preaching, study, administrative duties, or household and social obligations. In most of the cases the fatigue had developed after a gratifying occupation or a cherished goal or hope had to be abandoned on account of compelling circumstances, and the patient was forced to engage in a distasteful routine activity, against which he revolted intensely.

The first patient's condition has been briefly described above.

The second patient was a 37 year old married businessman, the favorite of his employers because of his enthusiasm, loyalty, and efficiency. Before his breakdown he was an indefatigable worker, full of zest and energy, a good provider for his family, a gay, outgoing fellow, the life of every party, who was not averse to occasional drinking, moderate gambling and promiscuity. Then rather suddenly this bright picture changed. He came for psychiatric consultation in a state of emotional turmoil. He had lost all interest in his work and social activities, had frequent weeping spells for no visible reason; he had to force himself every morning to go to his office, was continually so exhausted that he was finally forced to interrupt his work. He suffered also from lack of appetite, some epigastric distress and a compulsive tendency to sigh. This condition had developed shortly after his mother's death, and after he had been promoted to a more responsible position. The psychodynamic constellation behind his sudden breakdown can be given now only in briefest outline. For the last thirteen years the patient had lived an extremely sheltered existence. He had been employed all these years by the same firm and had slid easily into a successful business career in which he made steady progress, always working under the tutelage of the two owners of the firm, who were favorably inclined toward him. The patient's whole personality structure fitted into this situation. He basked in the sun of the paternal interest and appreciation of his superiors; he had, in short, the psychology of the white-headed boy. The emotional atmosphere of the office was a continuation of that of his home in which he was the youngest of six siblings. Both parents were very proud of his accomplishments and liked to brag about him to relatives and friends. Just as his main

desire had been to please the parents, so now it was to please his employers. He liked freedom only as it was combined with the security of supreme providence, that of God, the parents, and the employers. Under a strong leader he was a good soldier. Though he became the first among the employees, every move was made under the criticism and guidance of his employers. While his salary was moderate he received a large bonus every Christmas, often larger than his yearly salary. Thus, even his financial compensation came in the form of a paternal gift, the expression of recognition and love of his employers. He had great joy when he could put down a substantial order on the employer's desk or when he arranged a successful, gay party for the business friends of the firm. He took care of every detail of these parties, food, wines, and girls, and was allowed to participate as an equal. Thus even his illicit pleasure could be enjoyed with the sanction of his superiors. He had been married for sixteen years to a maternal, unassuming woman and had one son. His wife cared for his comforts, put up with his moods and demands without burdening him with her demands.

After the war started everything changed. With the shrinking of business the future of the company for a long while did not look promising. While the feverish activities, solicitation of new business stopped, he was, at the same time, pushed toward more responsibility. It was the tacit expectation of the employers that he should gradually take over the greater part of the executive work. At the same time financial rewards diminished. One day the patient, with tears in his eyes, showed a small bonus check which he did not even cash. "It is not the money itself which counts," he said. He would not have wanted a larger bonus check since he knew that it was not justified, but the old glory of the business which reflected on him was gone and the future looked uncertain indeed. About this time his mother died and he had to take care of the old and decrepit father. On top of all this his wife became ill and began to be demanding. This was the situation in which the patient emotionally collapsed. Life lost all meaning for him. There remained only duties, responsibilities, hard fight, and nothing of the early glamour. The patient began to detest getting up in the morning and going to the office, where every demand upon him appeared as a tremendous task. He became irritated with his inferiors who came to him for advice; he had to use all his willpower to go through the daily routine of his office work. Bringing in new business became almost impossible but in any case he detested all the effort which would have been required. Furthermore, the employers re-trenched for the duration and seemed satisfied with a kind of hibernation. As soon as the patient developed a confidence in the analyst and transferred to him his dependent attitude, he began to pour out his secret longings for security and love. A typical

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phantasy was to run away and go to one of his married sisters and live with her. He wished to escape from business, to go to a sanitarium, on a vacation, or even to run away entirely. Most curious was an unconscious wish which gradually became fully conscious, to go to another part of the country and start again as a young employee with a small salary. This desire, more than anything else, showed the patient's emotional need to work under parental protection. As soon as he reached the status of leader he had to run away and start the whole process again. This was the background of

spoiled only son, who could not bear separation from the parental home. Only pride and external necessity had induced him to go into practice and become more independent. Though he married an indulgent woman he remained emotionally attached to his former family. The idea of becoming a busy practitioner appealed to him so little that for the first five years he made no serious efforts to build up a practice, in fact, he did much to avoid it. Under the influence of his pride and later, after he married, of external necessity he forced himself to build up a practice. His acute attacks of weakness and his

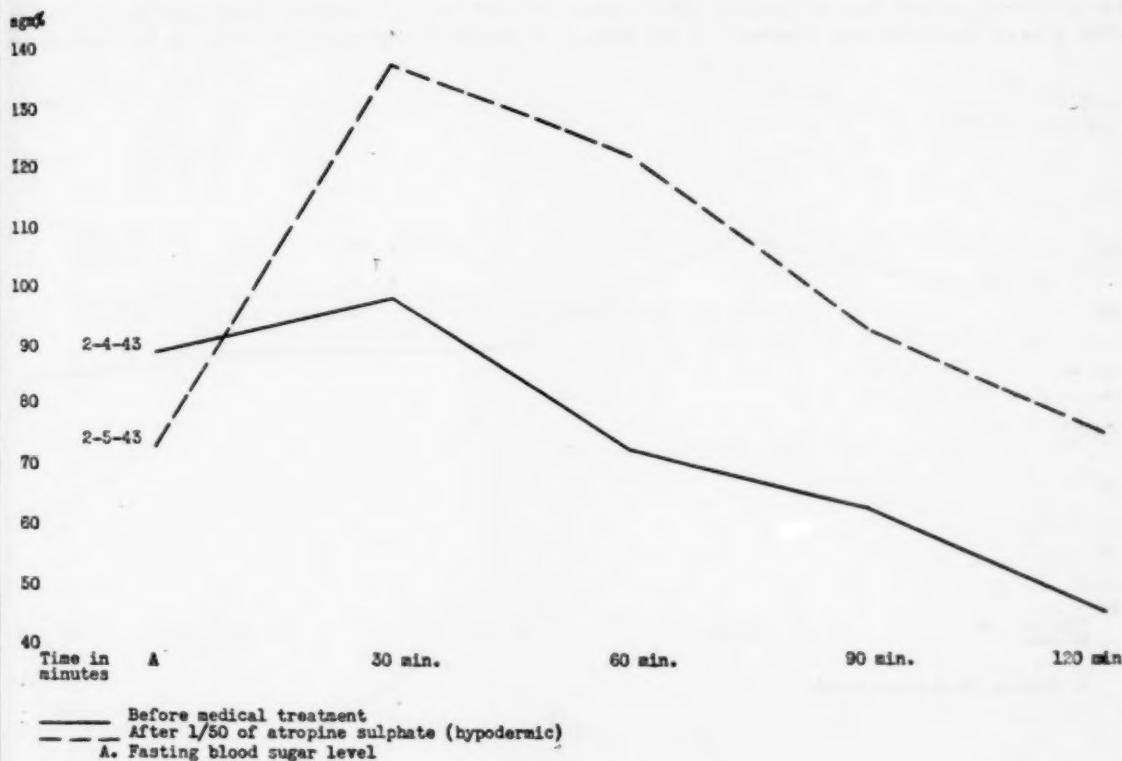


FIG. 2.

his emotional collapse when his fatigue developed. A flat intravenous glucose tolerance curve was found (fig. 2).

Patient 3, a 36 year old physician, developed attacks of fatigue which usually came two or three hours after eating. The feeling of weakness, combined with sweating and light-headedness, was so severe that he had to stop his activities and sit down, or stop when he was walking on the street. The attacks were connected with anxiety. His anxiety became so intense that he developed a phobia which prevented his exposing himself to any situation that might bring on a fatigue attack when he was away from home. This condition developed shortly after he entered private practice. He had always been the center of interest of his over-indulgent parents, a

phobia seriously interfered with his work and he remained satisfied with working on a restricted schedule. Twice formerly he had been diagnosed as a case of functional hypoglycaemia. The diagnosis was confirmed by another examination and intravenous glucose tolerance test (fig. 3).

Patient 4, a 39 year old housewife, came with the following complaint: "Life has become entirely meaningless to me. I have no aims to strive for. The daily household duties are a chore. Visits to and from relatives are distasteful. I do not know what to do with myself. I have a terrific let-down feeling and from time to time I am so weak and fatigued that I cannot move." This condition had developed after she had finally abandoned a desire to have a child of her own and had given up the wish

to adopt a child in the face of her husband's adamant objection to adoption. The diagnosis, relative hypoglycaemia, was made after an intravenous glucose tolerance curve showed the typical flatness (fig. 4).

Patient 5, a 30 year old artist, developed acute attacks of weakness with sweating and tremulousness five years before, shortly after he had given up his career as a creative artist and accepted a business position under pressure from his father. When he was engaged in creative work, he had been an indefatigable worker. "Without art, life lost all meaning for me," he said. As a business man, he worked under great internal protest, and finally, because of his attacks of fatigue, had to give up office work. After this, his condition soon improved. A flat intra-

Patient 7, a 58 year old minister, complained of extreme weakness which developed during convalescence from a not very serious upper respiratory infection. He felt continually tired and had difficulty in assuming his routine activities after prolonged summer vacations. On his return from vacation this year the respiratory infection had kept him in bed for a few weeks. Although months had passed he could not recover from the feeling of fatigue, which was so overwhelming that he could not force himself to resume his activities. This complaint was particularly impressive since it came from a man of extreme ambition and willpower, who had driven himself into a compulsive hyperactivity all his life. A deeply rooted insecurity reaching far back to his

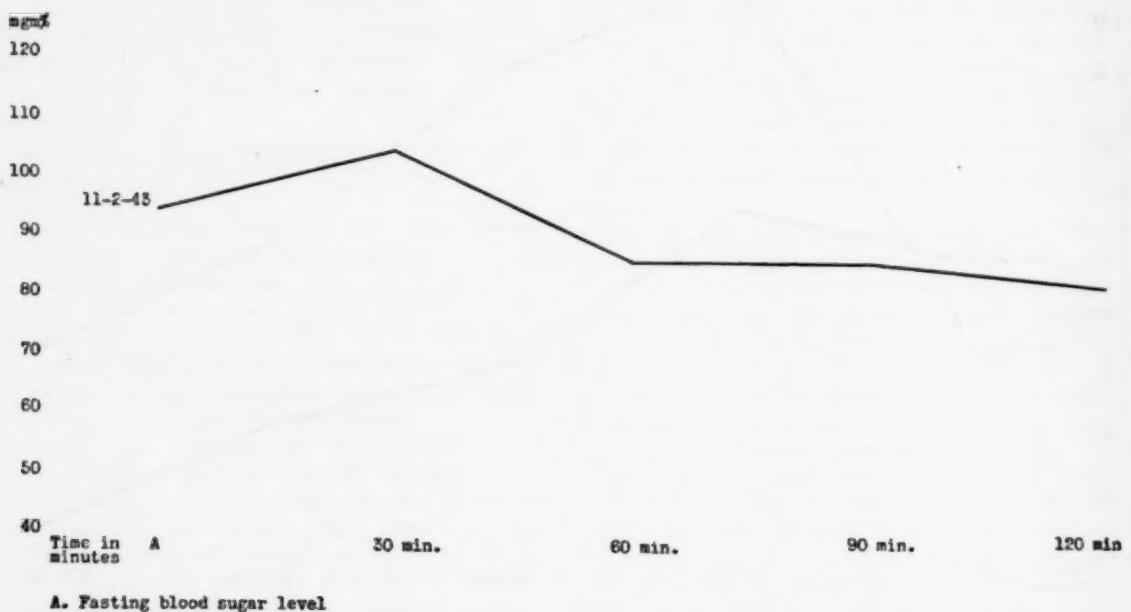


FIG. 3.

venous glucose tolerance curve confirmed the diagnosis of relative hypoglycaemia (fig. 5).

Patient 6, a 50 year old architect, a bachelor, came to one of us in a despondent and confused state of mind. Life lost all meaning for him after an unsuccessful attempt to change his occupation, in which he had lately lost interest. In the pursuit of his hobby, nature studies, he was indefatigable. He had never had any sexual relation; he had no intimate friends. Financially independent at 50 years of age, he stood alone in the world without any aim to strive for. For therapeutic reasons he was urged to take a job in his own field in which he had won recognition, but he had to force himself to the daily duties of the new job, and from time to time felt utterly exhausted. He was referred for examination and a flat intravenous glucose tolerance curve was found (fig. 6).

childhood was responsible for an insatiable craving for prestige, which he tried to achieve by methodical, incessant hard work, forging ahead in his career. His genuine interests, however, were of a philosophical and scientific nature. His breakdown came at the height of his career. His insecurity, however, did not allow him to relax until finally a vacation, prolonged by illness, gave him a real taste of a life of contemplation. The internal unconscious rebellion against going back into the harness resulted in a fatigue so extreme that he could no longer master it by sheer will power as he had in the past. The patient showed a flat curve in the intravenous glucose tolerance test (fig. 7).

Patient 8, a 20 year old university student, was the only son of overindulgent parents. He showed many pronounced schizoid traits, inability to concentrate, extreme shyness and emotional flatness, and an in-

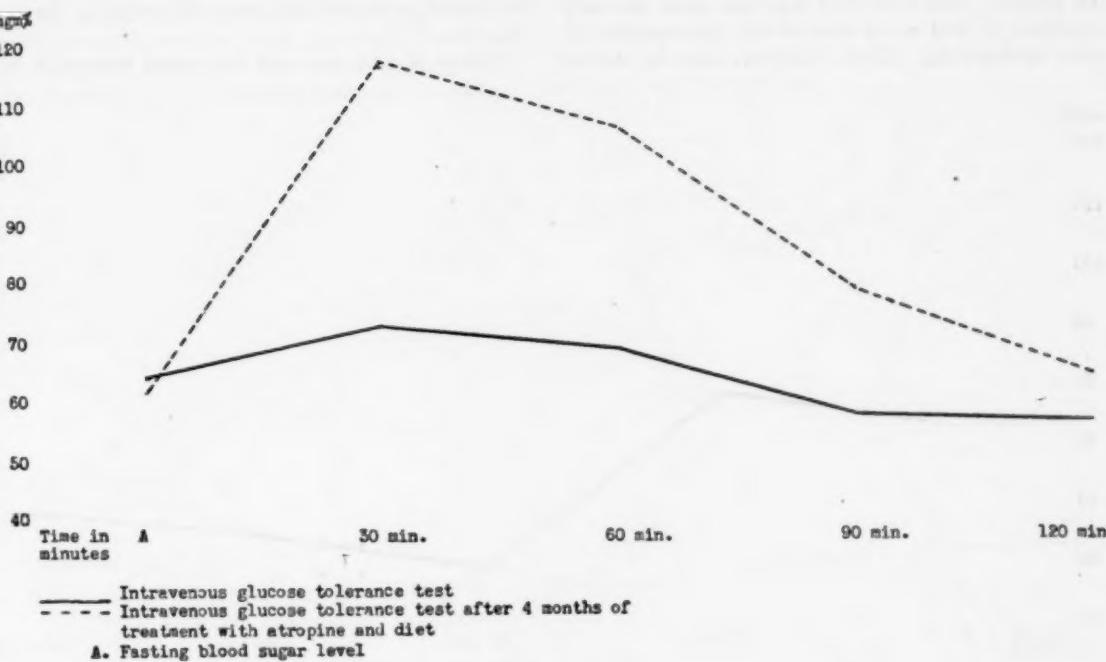


FIG. 4.

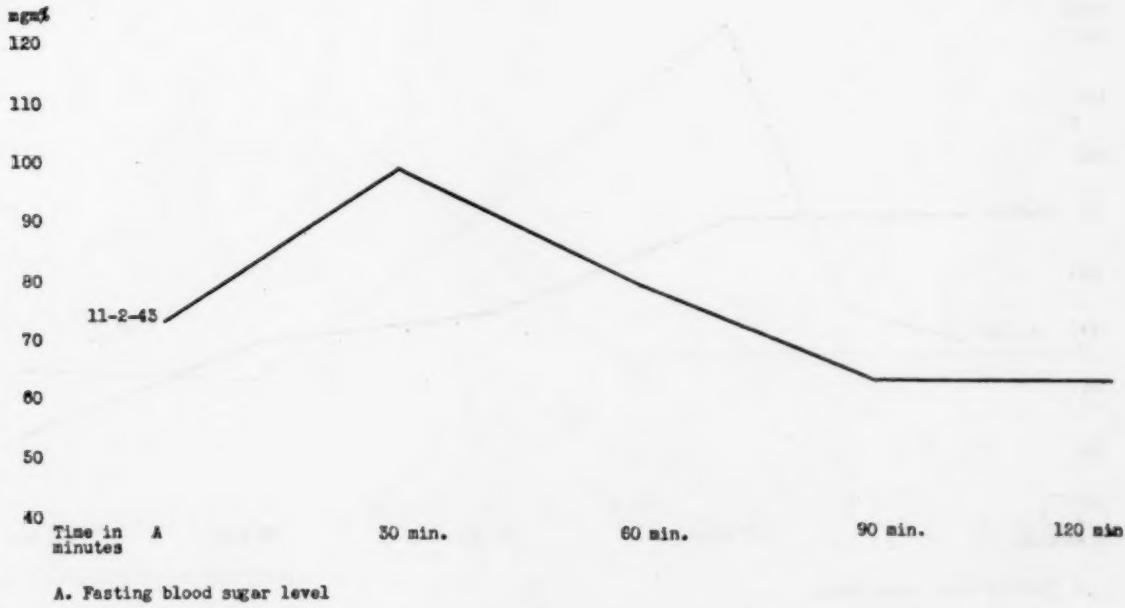


FIG. 5.

clination to day-dreaming, in which he pictured himself as a great inventor and benefactor of humanity. His parents' chief complaint was that since his early childhood he had never showed any spontaneous interest in anything. Lately, however, since he started

venous glucose tolerance curve was the lowest seen in any of our series. Unfortunately, external reasons prevented a psychotherapeutic follow-up in this case (fig. 8).

Patient 9, a 25 year old unmarried woman, a uni-

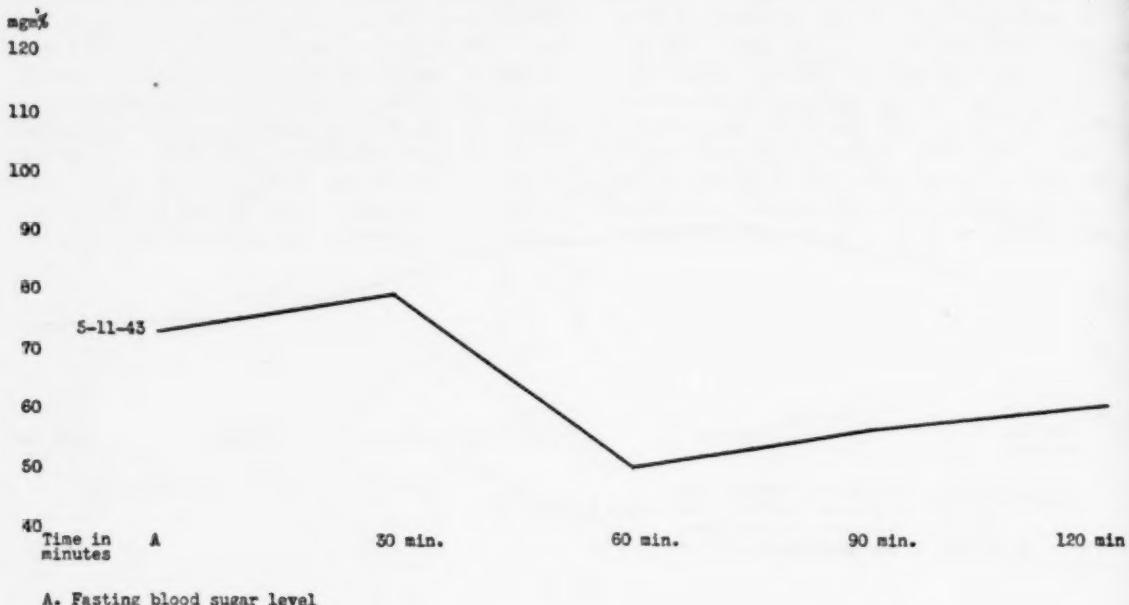


FIG. 6.

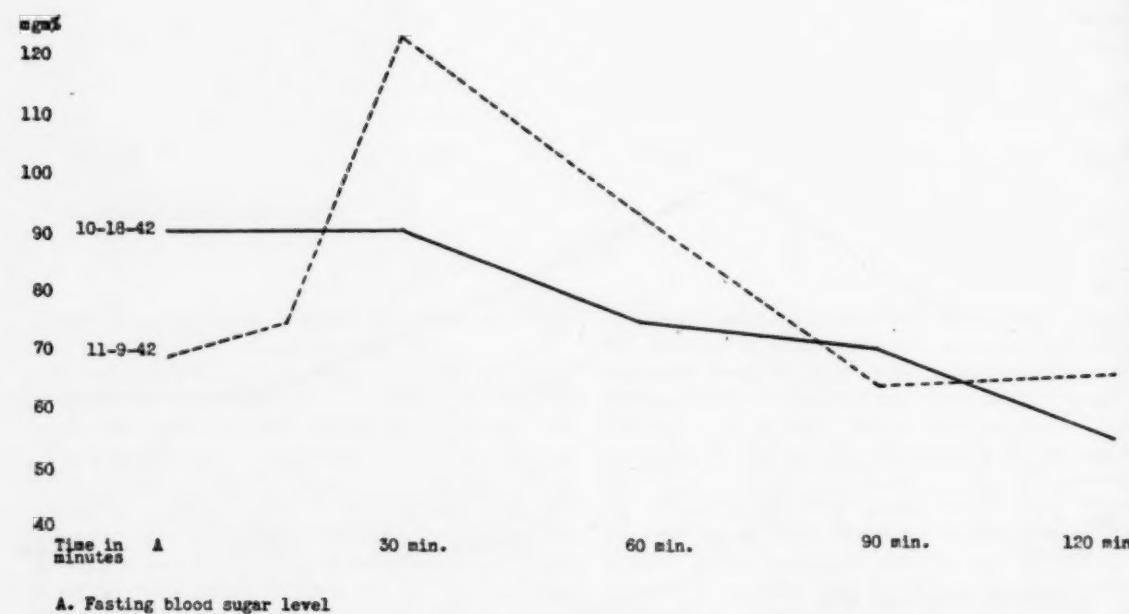


FIG. 7.

his university studies, he had struggled desperately for adequate grades, which in spite of good intellectual equipment he could not make because of his lack of ability to concentrate on his work, and because of constant physical exhaustion. His intra-

versity student, developed fatigue attacks while she was forcing herself to serious pursuit of her studies in preparation for a career. She was torn between two desires: to continue her studies and to go back to her parents and follow their plans, to marry and have

children. She envied deeply her girl friends who married one after the other and lived the conventional life. A deep seated conflict concerning sexuality had driven her away from marriage toward a career. Although she tried to persuade herself that she was above a stupid bourgeois existence, in reality

A BRIEF SUMMARY OF THE PRECIPITATING CONDITIONS

Patient 1. The highly sensitive woman developed her condition after she gave up the hope of solving a marital problem.

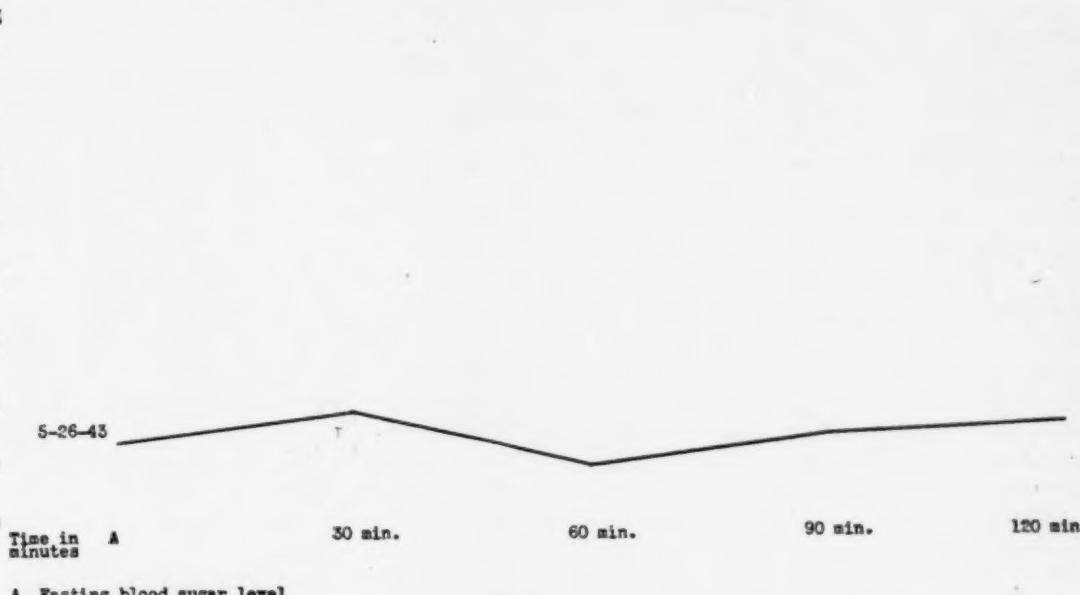


FIG. 8.

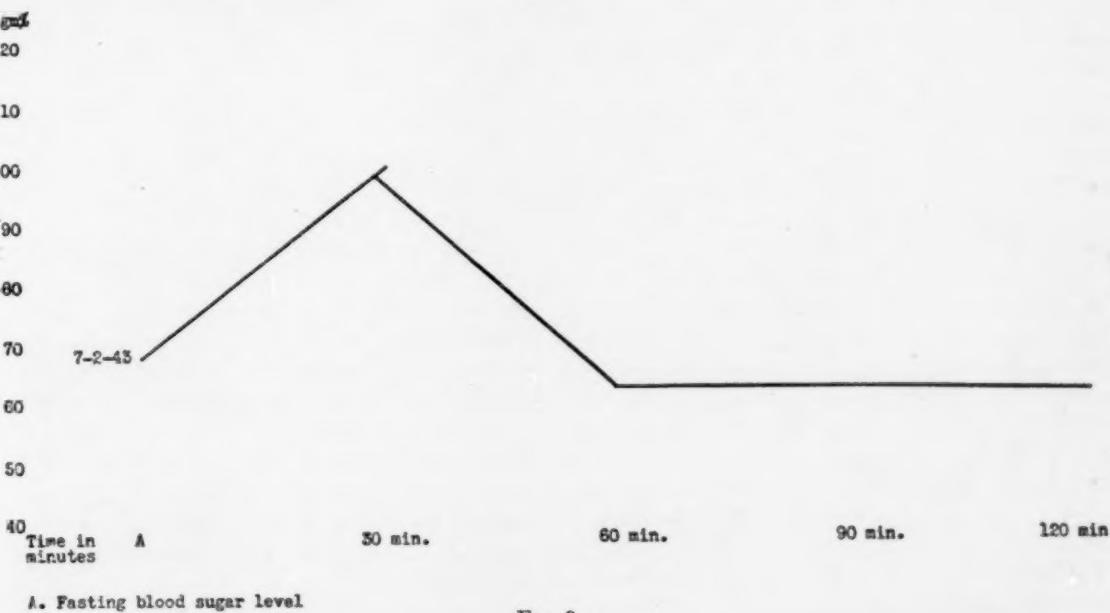


FIG. 9.

her studies represented nothing but enforced labor. In this condition her chronic fatigue developed, punctuated with occasional acute spells of utter exhaustion. A flat intravenous glucose tolerance curve supported the clinical diagnosis of relative hypoglycaemia (fig. 9).

Patient 2. The enthusiastic business man developed his fatigue attacks when the main incentive in his work, guidance and approval of his superiors, ceased, partly because of slowing down of the business, and partly because of his promotion to a fully responsible job.

Patient 3. The physician suffering from phobias developed his fatigue attacks shortly after he went into private practice much against his own inclinations.

Patient 4. The housewife developed her fatigue attacks when her wish to have her own child or adopt one finally had to be abandoned.

Patient 5. The artist developed his attacks immediately after he had accepted, with great internal protest, a position in a business office and at the same time had given up the career of an artist to which he was deeply devoted.

Patient 6. The architect developed his fatigue attacks while working in a responsible job which he accepted at the psychiatrist's request, although he had no desire to do so. He wanted to devote himself exclusively to his hobby of making studies of wild life.

Patient 7. This case appeared at first as an exception. The patient, a minister, professed to have the greatest interest in his regular activities. However, the psychotherapeutic interviews revealed that although he had always been driven by an insatiable thirst for prestige, his genuine interests were along different lines, which he could not fully admit.

Patient 8. The schizoid university student developed his excessive fatigue while he was struggling desperately to improve his grades, although he lacked all interest in his studies.

Patient 9. The woman university student developed her fatigue attacks while she was forcing herself to engage in a career, at the same time envying the life of her girl friends who married and lived the conventional life her parents had planned for her.

The outstanding common denominator in the psychological picture of these cases is a lack of spontaneous urge toward the activity in which the patient was then engaged. It was only under the compulsion of external necessity, or under the pressure of duty, pride or insecurity that the patients forced themselves to sustained efforts, although they had no genuine interest or enthusiasm in their work. At the same time in most cases the patients were compelled by external conditions or internal reasons to give up the pursuit of activities or aims in which they had a real spontaneous interest and which in some instances had occupied the central role in their lives previously.

In all cases studied in detail, the emotional syllogism which led to the emotional situation in which the fatigue developed could be formulated as follows: "If I cannot have the gratification or activ-

ity upon which I insist, I refuse to make any effort." This emotional situation is similar to a sit down strike. Frustrated in their natural inclinations, these patients develop a protest reaction against perfunctory activities. Often they indulge in regressive fantasies and give up all real effort and ambition. The relative hypoglycaemic state is the physiological counterpart or concomitant of this emotional impasse. The resulting fatigue gives further excuse for regressive wishes, and thus a vicious circle is initiated.

A detailed discussion of the psychodynamic constellation in which the relative hypoglycaemic condition develops must be reserved for further publications. So much can be stated: In every case fatigue developed when a well-functioning goal structure collapsed, or, in other words, when that type of adjustment failed which Freud originally called the "reality principle." In his "Goal, Mechanism and Integrative Field," Dr. Thomas M. French (1) has investigated more closely the nature of adaptive goal-directed behavior and demonstrated the hierarchical system of goals based on subordination of subsidiary goals to a supreme goal which requires compromises between conflicting aims. He emphasized the significance of hope for sustaining the goal structure. Hopelessness concerning the main goal, on the other hand, is apt to disrupt the whole goal structure. In all our cases a disintegration of the patient's goal structure can be demonstrated. The emotional syllogism "If I cannot have what I want I will not play anymore," the all-or-nothing attitude, is characteristic of the emotional background of psychogenic hypoglycaemia. The condition develops when those compromise solutions break down which life requires from every struggling human being and the hope dwindles that the cherished aims in life ever can be obtained.

The histories of our cases which led up to the final emotional impasse show great variation; no common features could be detected. The personality types also show wide difference. One patient, No. 8, was a definitely prepsychotic schizoid personality, while Patient 2 was outgoing, hyperactive, enthusiastic, given to open expression of emotion and subject to mood swings, definitely a cyclothymic personality.

These differences show that it is not a type of personality, nor even a type of history which predestines a person to the development of this fatigue syndrome. It seems rather a certain psychodynamic constellation which occurs in certain life situations in personalities of all kinds that may lead to this type of physiological sequelae. The condi-

tion appears disturbed. sivity or t independent when that based on a gent imput to make t cations an external c for such s of obtaini efforts to interests gins to ap less exerti sit down to lead metabolism Table I

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tion appears when an adaptive equilibrium becomes disturbed. It is not a question of activity and passivity or the degree of intensity of dependent or independent attitudes. The condition develops when that intricate hierarchical system of goals based on subordination and compromise of divergent impulses collapses which every individual has to make to harmonize his conflicting aims, gratifications and standards with each other and with the given external circumstances. As a rule, an external change of life circumstances is responsible for such a collapse. When a person loses the hope of obtaining a cherished goal and gives up realistic efforts to rescue his major strivings and genuine interests from emotional shipwreck, when life begins to appear nothing but a sequence of meaningless exertion and killing routine, then the emotional sit down strike sets in. This, in many cases, seems to lead to a disturbance of the carbohydrate metabolism in the form of relative hypoglycaemia.

(Table I.)

THERAPEUTIC REMARKS

Of the nine cases studied five had been treated psychotherapeutically or psychoanalytically before they were put on atropine and diet management. Two received medical treatment before psychotherapy was started. In two cases only a psychiatric anamnestic study was made and the glucose tolerance curve established but no psychotherapy initiated. Our therapeutic discussion, therefore, deals only with seven cases. The bodily fatigue syndrome in all the seven cases either greatly improved or completely disappeared within a week after atropine and dietary management was instituted. The patients received 1/200 to 1/75 grain of atropine three times daily together with 2-7 mgm. of thiamin chloride and $\frac{1}{2}$ - $\frac{1}{4}$ gr. of phenobarbital, and were put on a diet containing no free sugar, only complex carbohydrates. They had three intermediary feedings in addition to three regular meals daily and a feeding before retiring.

In detail the therapeutic results are as follows:

Patient 1. In this 45 year old married woman, the diarrhea attacks and fatigue attacks practically disappeared. In the year after treatment the patient had only a few light attacks following unusually strenuous activity. She is still under the same management. Psychotherapy with this patient was discontinued ten weeks after she was put on the medical management. As a result of her analysis the patient was ready to accept her present life situation with less inner revolt. The medical management, however, contributed also to the improvement of her emotional status. Freed from her in-

ertia, she could resume her social and communal activities, which made her life less empty and meaningless. Although her basic problem remained unsolved, she accepted her life conditions with less internal rebellion. Further evaluation of this case from the therapeutic point of view will be possible only after the drug and diet management is discontinued.

Patient 2. This 37 year old businessman had been in psychotherapeutic treatment for four months before medical management was instituted. In the initial phase of psychotherapy his emotional condition, particularly his depression and tendency to weep, was considerably improved, but his revulsion against office work and the accompanying fatigue were unchanged. The initial effect of the medical treatment was an improvement in his physical fatigue but the emotional rebellion against work and his regressive phantasies became even more pronounced. Psychotherapy was continued in order to make him conscious both of his tendency to escape and of his tremendous attachment to his superiors. Gradually he regained much of his old enthusiasm. After six months of psychotherapy the patient was taken off the medical management, a new intravenous glucose tolerance curve was taken and was found to be less flat than the original. Seven months later another tolerance test showed even further improvement. This patient continues to feel well and to work hard at the same time. He is again his old self, has neither weeping spells nor lack of interest nor phantasies of resigning from his job. (fig. 10)

Patient 3. This 36 year old physician improved considerably after five months of psychotherapy. His disinclination toward his practice disappeared, his phobias improved. There remained, however, a great anxiety of the recurrence of his fatigue attacks, which have been kept under control by medical management begun two months after he started psychotherapy. Since this physician lives out of town, the psychotherapeutic interviews have been interrupted in the last five months because the patient felt rather contented in his present condition. On account of the residue of symptoms it is planned to resume psychotherapeutic interviews. At present, without the knowledge of the patient, the daily dose of atropine has been reduced to 1/150 grain three times daily and at bed time from a previous 1/75 grain dose.

Patient 5. This artist came to psychotherapy after he had been on medical management for two weeks. Soon after medication and diet were started, the patient's fatigue attacks ceased. However, he did not return to his office job and at present he is following his natural inclination toward creative art. His emotional problem has become more pronounced since his fatigue attacks diminished. Since psychotherapy has just begun, any further therapeutic remarks in this case are premature.

Patient 6. The 50 year old architect, from the

TABLE I

| Patient | Clinical picture | Other symptoms | Precipitating factors | Lab. findings |
|--|---|---|--|---|
| 1. 45 year old married woman. | Chronic fatigue and occasional acute attacks of weakness. Withdrawal from social activities. Apathy. Mild depressive state. | Diarrhea. Migraine. | Loss of hope for solving marital problem. | Iv. glucose tolerance test. Relative hypo-glycaemia. |
| 2. 37 year old married business man. | Loss of previous zest; weeping spells, depression, fatigue. Phantasies of retirement. | Epigastric distress, loss of appetite. Compulsive sighing. | Mother's death. Change in occupational situation: promotion to increased responsibility, slowing down of business, and less financial reward. | Iv. glucose tolerance test. Relative hypo-glycaemia. |
| 3. 36 year old married physician. | Circumscribed phobia. Acute attacks of weakness, light-headedness, 2-3 hours after meals, with anxiety. Withdrawal from practice. | | Leaving of parental home; assumption of private practice. | Iv. glucose tolerance test. Relative hypo-glycaemia. |
| 4. 38 year old married woman. | Lack of interest in everything. Rebellion against daily routine. Chronic fatigue and acute spells of exhaustion. | Colitis in past history. | Giving up hope to have or adopt child. | Iv. glucose tolerance test. Relative hypo-glycaemia. |
| 5. 30 year old married male artist. | Acute attacks of tremulousness, exhaustion and perspiration. Slight phobia. | | Giving up creative art and accepting against his own inclination a routine business position. | Iv. glucose tolerance test. Relative hypo-glycaemia. |
| 6. 50 year old bachelor architect. | General despondency and apathy, lack of interest in any activity. Loneliness. Fatigue while working. | | Frustrated longing for intimate human companionship; rebellion against routine job. | Iv. glucose tolerance test. Relative hypo-glycaemia. |
| 7. 58 year old married minister. | Chronic fatigue. Moderate depression. | Headaches. One epileptic (?) seizure in the past. | After vacation and illness increased resistance against resuming routine activities. | Iv. glucose tolerance test. Relative hypo-glycaemia. |
| 8. 20 year old single male university student. | Inability to concentrate, lack of spontaneous interest, shyness, emotional flatness, daydreaming. Extreme form of chronic fatigue. Picture of schizoid psychotic state. | | Struggle under external pressure for improving scholastic grades. | Iv. glucose tolerance test. Extreme relative hypo-glycaemia. |
| 9. 26 year old single female student. | Circumscribed phobia, depression, chronic fatigue. | | Analytic treatment increased the conflict between continuing career or returning to parents and marrying. | Iv. glucose tolerance test. Relative hypo-glycaemia. |

psychotherapeutic point of view, responded most successfully to treatment. Medical management was started because of his excessive fatigue in his daily work after two months of psychotherapy, which averaged only two weekly interviews. Within seven to ten days after the beginning of the medical treatment the symptoms of physical fatigue improved, but this was not followed immediately by any marked change in his emotional condition. An improvement took place only after the patient became able to have more social contact and to give up his isolated existence. Insight into his emotional situation has

which was taken at the height of his emotional withdrawal (fig. 11).

Patient 7. This 53 year old minister had been on drug and diet management for three months before he was referred to psychotherapy. At that time he had been relieved of his fatigue symptoms to a great extent. The symptoms did not return, however, after discontinuation of his medical management.

In all cases the physical fatigue improved or disappeared completely under medical management and psychotherapy. In almost all cases the disap-



FIG. 10.

gradually increased during the treatment. After four months of psychotherapy the treatment was interrupted for four months, and at the same time the medical management was discontinued. The fatigue syndrome, however, did not return. At the same time the patient became interested in a woman and a close friendship developed. After resuming his psychotherapy the patient became involved in a great conflict between the wish to withdraw from the woman and to marry her. An intensive working through of his attitude toward sexuality was followed by a resumption of his friendship; he became engaged, has married, and at present is on his honeymoon. At the time of his decision to marry, a second sugar tolerance test was taken. This test showed an improvement over the first one, six months before,

appearance of the fatigue syndrome brought the underlying emotional situation more sharply into consciousness and facilitated the psychotherapeutic approach to the basic personality problem. In all cases the disappearance of fatigue counteracted the regressive, escaping tendencies of the patient and in the majority it strengthened the patient's hopes and created a more optimistic outlook.

The interaction of psychotherapy and medical management is extremely complicated and we are far from understanding the dynamics of their interplay. This much, however, can be said with a fair amount of certainty. A condition of emotional let down, manifesting itself in a loss of enthusiasm

and hope and based on the disruption of the patient's goal structure, influences the vegetative balance. This manifests itself in a disturbance of the regulatory mechanism controlling the sugar concentration of the blood. This produces the asthenic symptoms and particularly the fatigue. Now a vicious circle becomes initiated. The fatigue favors the patient's tendencies toward withdrawal, impairs his efficiency and discourages new effort to continue or resume his activities. The fatigue syndrome gives the patient a powerful secondary ex-

perimentation in cases of relative hypoglycaemic fatigue.

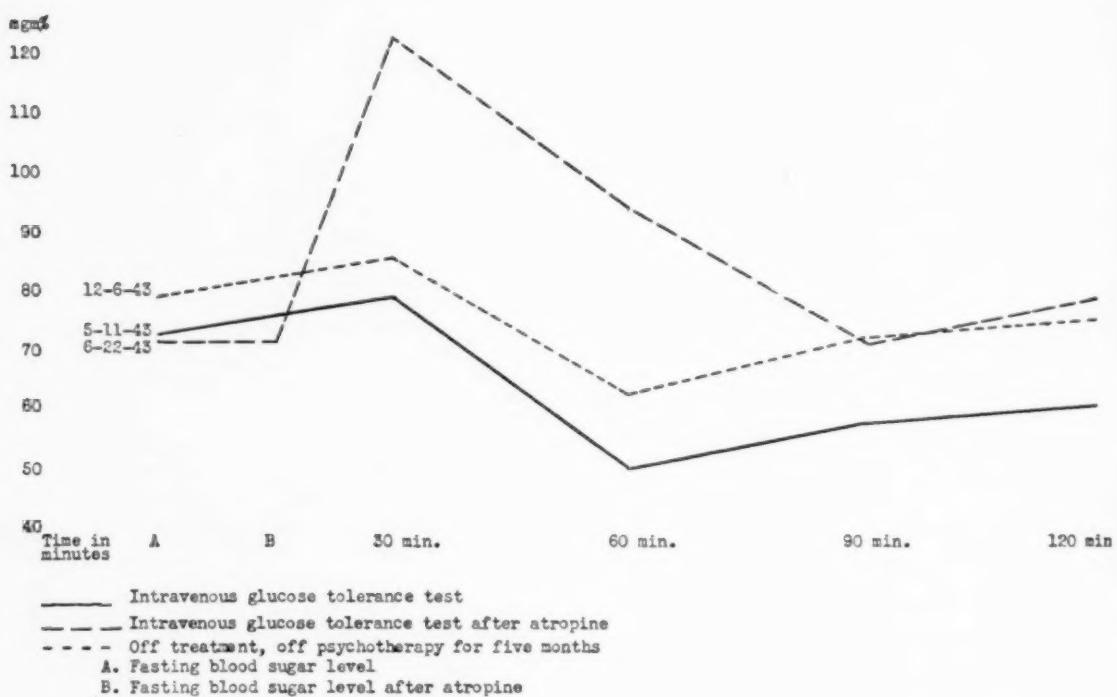


FIG. 11.

case for further withdrawal. Thus the initial emotional situation in which the patient lost all his original interest in activity and life in general becomes reinforced, by the relative hypoglycaemic condition or more precisely, by the disturbed regulatory mechanism of the carbohydrate metabolism. This disturbance for brevity's sake we may call "relative hypoglycaemia."²

According to our present experience, in many cases, the somatic treatment is most useful in breaking up this vicious circle, thus allowing a psychotherapeutic attack on the basic emotional prob-

² Relative because the absolute level of blood sugar concentration may not be low but the adaptation of the blood sugar level to the actual needs of the tissues is disturbed.

THEORETICAL REMARKS

The following working hypothesis seems to account for our observations. In certain emotional situations characterized by a loss of spontaneous zest and a revulsion against routine activities, a disturbance of the regulatory homeostatic mechanisms of the blood sugar concentration is likely to develop and cause the chronic asthenic syndrome and occasionally acute attacks of weakness and fatigue described in our cases. Our hypothesis is that the emotional tension to which one ordinarily refers as zest, enthusiasm or interest, keeps up a certain tonus in the vegetative innervations, a certain balance in the sympathetic adrenal and parasympathetic insular tonus. In extension of Cannon's fundamental views we assume that outwardly

directed activity of the organism in which it participates with enthusiasm, zest, spontaneous striving has a tuning up effect upon the sympathetic adrenal system qualitatively similar to that of fear and rage. The sympathetic effect of zest is probably less intensive but more prolonged than that of fear and rage. The conditions of fear and rage are extreme cases in which the organism is tuned up for an outwardly directed activity in an emergency situation. The main function of the autonomic nervous system is to adapt the internal vegetative functions of the organism to these external tasks which the organism is called upon to perform. On the basis of our preliminary observations we assume that, like rage and fear, a keen enthusiastic striving for a goal may have a similar, more prolonged but less intensive tuning up effect upon the internal vegetative processes. It is probable that without such a vegetative tuning up, sustained effort cannot be carried out with the same economy. It is well known that perfunctory activity performed without emotional participation is more fatiguing than even strenuous activity performed with emotional participation. Our clinical observations seem to indicate that fatigue and apathy developing during routine activity without interest are not merely subjective emotional states, but are based on the lack of adaptation of the carbohydrate metabolism to the effort required from the organism. Without emotional participation the tuning up of the vegetative processes and the shifting of the sympathetic-para-sympathetic balance in favor of increased sympathetic tonus does not take place. Hence the organism is engaged in a continued activity without the corresponding metabolic adjustment necessary for sustained effort. Probably just as important as the lack of emotional participation is a definite emotional rejection of compulsory activity in which the patient is not interested. This emotional rejection creates the emotional state of flight, and increases the desire to give up. The emotional flight reaction creates a condition in the vegetative processes which we have called "vegetative retreat." The internal processes become attuned to a state characteristic for relaxation in which the vago-insular tonus is preponderant over the sympathetic adrenal tonus. This is a most paradoxical situation. The organism engages in activity while its vegetative metabolic processes are attuned to a state of relaxation. One aspect of this condition is that under the influence of vagal excitation, or at least of vagal preponderance, a condition of hyperinsulinism develops and leads to a disturbance of the regulatory mecha-

nisms which control the sugar concentration of the blood.

Not the absolute lowering of the sugar concentration but the inability of the organism to raise the sugar concentration of the blood as it is required during activity (particularly during mental activity, because the exclusive fuel of the brain cells is sugar) is the immediate cause of the subjective feelings of fatigue and exhaustion as well as in the acute cases of tremulousness, light-headedness, and weakness. The occasional anxiety state, which sometimes accompanies the attacks, is a subjective reaction to the acute feeling of weakness and has no specific etiological significance.

This view accounts fully for the beneficial effects of atropine and of diet containing complex carbohydrates. The atropine diminishes the vagal insular tonus and shifts the balance in favor of the sympathetic tonus. This counteracts the tendency toward a presumed hyperinsulinism and allows the organism to raise the blood sugar concentration to the level required by increased activity. A diet without sugar and including complex carbohydrates is calculated to eliminate the homeostatic reaction provoking increased insulin production and to maintain a steady supply of carbohydrates to the blood stream. The essence of this hypothesis is the extension of Cannon's view concerning the influence of rage and fear upon metabolic process via the autonomic nervous system. We assume that zest and enthusiasm, just like fear and rage, create an excess of sympathetic-adrenal tonus and mobilize carbohydrate from its depots while the desire for relaxation favors an excess of vago-insular tonus and thus the storing of sugar. We are planning extensive animal and human experiments to test the validity of these physiological views.

REFERENCES

1. FRENCH, THOMAS M.: Goal, mechanism and integrative field. *Psychosom. Med.*, 3: No. 5, 1941.
2. HIMWICH, HAROLD E.: A review of hypoglycemia, its physiology and pathology, symptomatology and treatment. *Am. J. Digestive Dis.*, 2: No. 1, 1944.
3. PORTIS, SIDNEY A., and ZITMAN, IRVING H.: A mechanism of fatigue in neuropsychiatric patients. *J.A.M.A.*, 121: No. 8, 1943.
4. RENNIE, T. A., and HOWARD, J. E.: Hypoglycemia and tension-depression. *Psychosom. Med.*, 4: No. 3, 1942.
5. ROMANO, JOHN, and COON, GAYLORD P.: Physio-

- logic and psychologic studies in spontaneous hypoglycemia. *Psychosom. Med.*, **4**: No. 3, 1942.
6. SZONDI, L., and LAX, HEINRICH: About the alimentary glycaemic reaction in neurasthenia. *Zeitschrift für die Gesamte Experimentelle Medizin*, Bd. **64**, 1929, pp. 274-280.
7. WILDER, JOSEPH: Psychological problems in hypoglycemia. *Am. J. Digestive Dis.*, **10**: No. 11, 1943.

RHEUMATIC DISEASE, WITH SPECIAL REFERENCE TO PSYCHOSOMATIC DIAGNOSIS AND TREATMENT *

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DEVELOPMENTS IN PSYCHOSOMATIC CONCEPTS AND THEIR APPLICATION

Last year, during the first meeting of the Council on Brief Psychotherapy, discussion was focused on different types of cases treated, therapeutic results, and methods of recording research data. Important clinical material was presented but the meeting was more a clinical conference than a basic scientific discussion directed toward the formulation of a general frame of reference or of diagnostic criteria. The earlier emphasis should be continued, but it is likely to result in a formidable accumulation of case records which will be of doubtful scientific value and difficult to assimilate in terms of clinical practice unless these case records are analyzed in relation to the development of psychosomatic concepts.

Those interested in psychosomatic medicine today are thinking in terms of the necessity for the organism to maintain a homeostatic equilibrium within itself and within its environmental field. In the science and practice of medicine there is need for a new approach to classification based on psychosomatic concepts. Here the major contributions have come from physiologists on the one hand and from medical psychologists on the other. But it has been difficult to bridge the chasm between these two disciplines. Existing nosology is inadequate in both psychiatric and somatic aspects. The disease entities now recognized in each of these fields have little relevance to the organism as a whole or to the *organism-environment continuum*. These are essential concepts in the psychosomatic approach. There is now little common ground between psychiatric and somatic classifications. A well adapted nomenclature is an aid to scientific progress. Building a nosology is not a mere exercise; it is also a

necessary step in the development of therapy. Until medical nosology as well as principles of diagnosis and therapy have been revised, the physician interested in psychosomatic problems is forced to rely on the descriptions of illness syndromes in which the role played by psychic and somatic components is evaluated.¹

Arguments as to whether cardiospasm is mainly a form of hysterical conversion or a vegetative neurosis would be unnecessary if there were a nosology free from artifacts of pre-psychosomatic medicine, whether psychiatrically or somatically oriented. Psychosomatic disorders are not entities that can be catalogued under the earlier diagnostic labels invented by psychiatry or internal medicine, or a combination of the two.

It would be possible to assign mathematical symbols to the factors of major valence and to work out a system of equations or other mathematical expressions, as has been done in most advanced sciences.² Symbolic logic is helpful even before it is possible to assign specific magnitudes to the concepts involved because through it relationships may be formulated which may be presumed to hold true for all of the factors in question. It is necessary to specify such relationships in order to know what it is helpful to measure. Work along this line is now proceeding but for the purpose of the present paper it is necessary to use the nosology which is at present familiar.

¹ For a further development of this idea, see Dunbar and Soule, *Suggestions Preliminary to a Psychosomatic Nosology*. Prepared for the annual meeting of the American Society for Research in Psychosomatic Problems, Chicago, June 11, 1944.

² Dr. W. Horsley Gantt, unpublished, has worked out a mathematical formula which holds true for all unconditioned reflexes, and a different one which is an accurate mathematical description of conditioned reflexes. (See Gantt, W. H.: *Experimental Basis for Neurotic Behavior*. *Psychosom. Med. Monographs*, Vol. III, Nos. 3 and 4, 1944, p. 1.)

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The following assumptions may be taken as basic:

1. Psychosomatic problems are fundamentally phenomena which must be discussed in terms of the amount and transformation of vital energy;
2. The order which is to be investigated has as its field a system of tension or influence in which what is called environment acts as one pole and what is called the organism acts as the other;
3. A major concern is the impingement on the organism of specific stimuli from the total field and the specific quanta of energy mobilized by the organism in response to these stimuli;
4. It may be assumed that these quanta of energy mobilized in the organism must be utilized or transformed in two ways: (a) by the behavioral equivalent of the quanta—that is, the reaction toward the environment on the part of the organism, and (b) by the somatic equivalent of the quanta, the physiological changes produced within the organism.

Starting from these assumptions, it may be possible to develop criteria for brief psychotherapy and prognosis which will be somewhat more systematic and a better guide to clinical observation than those previously outlined, and further developed by Dr. Grinker in this symposium. But for the present, the hiatus in medical knowledge must be bridged by psychosomatic description and the evaluation of factors such as the area of major conflict, the characteristic ways of dealing with it, the relative strength of the patient's ego and defenses, the ease of developing insight, the capacity for transference, and the degree of somatic damage. On the basis of such evaluation, a relatively satisfactory decision can be made both as to the nature of the therapy to be recommended and as to the focus most effectual for briefer psychotherapy when this method of treatment is indicated.

The war emergency has resulted in an increased demand for a clearer outlining of the personality types most susceptible to one or another of the familiar psychosomatic disorders. Since chronic illness is a major problem in the industrial army as well as in the armed forces, a better definition of personality profiles becomes a need in public health and in preventive medicine. Patients who are accident-prone are characterized mainly by behavioral disorder. In the profiles of sufferers from coronary insufficiency or hypertension somatic dis-

orders are prominent. It is true, of course, that the accident personality probably in the course of time will suffer from somatic damage and the coronary personality may be recognized by a specific type of behavior antecedent to the somatic injury. Nevertheless, there remains the distinction that somatic injury to the accident-prone results immediately from a collision with the environment, whereas the somatic injury to the coronary personality results from rapid accumulation of tension within the organism.

Although in both types infantile traits are prominent, and although both experience their major conflicts in relationship to authority, it may be said in general that persons susceptible to coronary disease attempt to repress the conflict, and so disturb their inner equilibrium, whereas persons who are accident-prone attempt to avoid the conflict and so tend to clash with their environment.

Reference is here made to the personality profile of the accident-prone, as contrasted with that for coronary disease,³ because it is familiar to most students of psychosomatic problems, and because it illustrates the point that in psychosomatic diagnosis, careful examination must be made of both the patient's focal conflict and of his characteristic way of dealing with it. In the personality profiles of the accident-prone and of the sufferers from coronary insufficiency, the focal conflict is in the field of personal autonomy and relation to authority. The reaction to the conflict is avoidance in the one case and in the other an attempt to rise above the superior.

Patients with rheumatic fever give a history of a different sphere of conflict which is clearly definable usually many years before the development of the illness. This group of patients differs from the first two groups more in the focus of the conflict than in the manner of reacting to it. An internist, commenting on these three personality profiles, stated that he could understand the discussion of the major conflict of the accident-prone as an attempt to avoid authority, and the major conflict of the coronary patient as an attempt to subdue authority, but he did not understand why, when talking about the rheumatic patient, one should focus on the sexual instead of the authority problem.

Of course, all three groups have difficulties in the sphere of sex, but in the case of the accident-prone and the coronary types, there is usually little doubt in the minds of those concerned

³ See Dunbar, Flanders: *Psychosomatic Diagnosis*. New York, Paul Hoeber, 1943, p. 586.

as to which sex they embody, and so they are able to assimilate this factor within the pattern of their general relationship to the environment. On the other hand, the rheumatic patient in his immaturity has never been able to make up his mind whether he is male or female, or which he would like to be. Hence, preoccupation with his sexual role impedes any endeavor to effect a relationship with the environment on more mature terms. Therefore, he escapes the authority conflict and in his attempt to adjust to his environment he concentrates on his sexual role and on his social relationships. He attempts to please, irrespective of whether the person to be pleased is superior, equal, male or female. The conflict to which he is subject makes his need to please especially acute.

DIAGNOSTIC CRITERIA SUPPLIED BY THE PERSONALITY PROFILE

In the personality profiles mentioned,* sufferers from rheumatic disease are divided into two groups with distinctive personality differences. The first group comprises patients with acute rheumatic fever characterized by polyarthritis, or with a history of several such attacks, but with little or no cardiac damage. The second group comprises patients who come in with heart disease but without a clear history of acute rheumatic fever, or with merely a vague past history of "growing pains." It is interesting that in the first group there are two sub-personality types, in one of which the disease process is more likely than in the other to progress to cardiac involvement and damage.

In the first group, the Type A personality, which is unlikely to develop cardiac damage, evinces some traits which suggest the accident-prone personalities. These patients actually have a higher accident record than either Type B in Group One, or than patients in the Group Two personality. Their accident record is higher than that reported for any other organic disease group studied in a review of serial admissions to a general hospital over a period of fourteen years. These patients, except for the accident-habit syndrome, and their many attacks of rheumatic fever, with or without cardiac involvement, are more likely than those in Type B Group One to recover with little permanent cardiac damage. But many of them later develop rheumatoid arthritis. The Type B personalities, the cardiac type (numerically the larg-

est), have many personality traits in common with those in other groups suffering from cardiovascular syndromes. They are not accident-prone. A follow-up of these patients over a period of time indicates that they gradually swell the ranks of those diagnosed as having actual rheumatic heart disease.

Although the differences in the profiles of the two groups, comprising three types of sufferers from rheumatic disease, are minor and all are readily distinguishable from those of sufferers from accident-proneness or coronary disease, they have an important bearing on criteria for brief therapy.

For the first twelve years, in the study of serial admissions just mentioned,⁴ attention was focused more on diagnosis than on therapy, although experiments with brief psychotherapy were included, insofar as facilities allowed. During the last year, the major focus has been on criteria for brief psychotherapy with careful analysis of time involved and results obtained.⁵ In about a third of the serial admissions studied during the last year, brief psychotherapy has been indicated and good results have been obtained. In another third it has been possible to outline the role played by the emotional factors in the development of the disease process, but at the time of admission the disease process had become irreversible or so nearly irreversible, and the patient's defenses so rigidly established, that the most to be hoped for from brief psychotherapy could be little more than palliative.

The remaining third is accounted for by patients who died shortly after admission or were transferred to a chronic disease hospital where no provision for psychotherapy was made. The case records of these patients showed clearly that, had they come to the hospital earlier in the course of their illness and that had facilities for psychosomatic treatment been available, most of them, like most of those in the second third, could have responded to a rational type of brief psychotherapy. These percentages are based on a study of patients suffering from a number of different syndromes and would be altered in a plus or minus direction if limited to a given syndrome.

With specific reference to sufferers from rheumatic disease, it appears that recurrences in rheumatic fever Type A could be prevented by brief

* To conserve space, the personality profiles which originally accompanied this article are omitted. They are printed in full in *Psychosomatic Diagnosis*, Chapter IX.

⁴ Dunbar, Flanders: *Psychosomatic Diagnosis*, Paul Hoeber, 1943.

⁵ Dunbar-Arlow: "Criteria For Therapy in Psychosomatic Diagnosis," Centennial Meeting, American Psychiatric Association, Philadelphia, Pa. (May, 1944).

therapy in a large majority of cases. Unfortunately, in Type B, as well as in patients with well developed rheumatic heart disease, the most that can be hoped for the majority is diminution in invalidism and decrease in the number of acute attacks. But in these two groups, there is a minority who, in spite of somatic damage, respond particularly well to such treatment. The criteria here are those given in the First Symposium on Brief Psychotherapy.⁶

THERAPEUTIC APPLICATION OF THE PERSONALITY PROFILE

In terms of the criteria outlined in the paper presented, the accident-prone are on the whole relatively difficult subjects because of their tendency to act out and because of their extreme difficulty in establishing emotional rapport. Sufferers from hypertensive cardiovascular disease and coronary insufficiency are relatively easy, provided the disease process has not become irreversible.⁶ Because of their opposite tendencies, they think before they act, establish rapport with comparative ease and are relatively articulate about their feelings. In contradistinction to the accident-prone, they are fairly good observers of themselves. From the point of view of therapy, sufferers from rheumatic disease might be considered a middle group with respect to these two syndromes. Any attempt to make them grow up brings improvement, with the qualification that if the psychotherapeutic attempt is too drastic they may shift to another disease pattern, such as accident-habit on the one hand, or hypertensive cardiovascular disease on the other. In a thirteen-year review of these syndromes, the major shifts in rheumatic fever patients, from one syndrome to another, have been in these two directions.

The following case is illustrative because it embodies a change from one syndrome to another with a corresponding change in personality profile.

CASE RF 304.⁷ An eleven-year old boy had an attack of rheumatic fever with severe polyarthritis. A second attack at the age of seventeen resulted in his admission to the hospital. A year later he was readmitted with the diagnosis of chronic rheumatic heart disease with mitral and aortic insufficiency, hypertension and anxiety state. A medical note at

the time of the second admission states, "It is difficult to see how his cardiac lesion could have progressed to the present point since then"—referring to the examination of the previous year.

The personality profile was that of Rheumatic Fever Type A. He had a family history of rheumatic fever and nervousness; there was continuous subacute conflict between father and mother; he had an illness record of respiratory troubles; and he had suffered from the accident-habit prior to his first attack of rheumatic fever. His accident record included two fractures. He identified himself with his mother, was unable to get along with girls and was uncomfortable with boys because of his girlishness. He failed to adjust to job or career and suffered from social anxiety.

While convalescing in the hospital from rheumatic fever, he thought a good deal and reported that "it seemed as if I were a different person." He decided to finish his education and take a responsible position. He began to admire his brother-in-law, who had a managerial job. At that time he developed hypertension.

At the time of his second admission, (that for rheumatic heart disease), he received brief psychotherapy. He was discharged with a blood pressure of 144/100. Continued psychotherapy was recommended, but was impracticable. A follow-up five years later revealed that after discharge he had worked up to a managerial position and started going with a girl, though without sexual experience. He could not bear the responsibility of the job, became ill and gave it up. He could not marry the girl because he could not bring himself to leave his mother. He found a temporary solution to his conflicts by giving up the girl and returning to a former position as salesman. When examined at this time, the patient had no hypertension but suffered from anxiety and depression.

In evaluating the results of brief psychotherapy, it is important to consider whether the disease tendency has been really interrupted or merely shifted from one manifestation to another. This danger is less if the personality is relatively mature and if crystallization of the disease process, in somatic damage and character defenses, is not too far advanced. Such crystallization seems to take place more rapidly in the immature personality.

Anxiety and guilt, as well as immaturity, are characteristic of sufferers from rheumatic disease. Patients are often admitted and discharged with the diagnosis of rheumatic heart disease, even when there were no objective signs of renewed rheumatic activity or cardiac decompensation, but merely palpitation on the basis of an anxiety neurosis which had assumed exaggerated proportions because of the existing cardiac damage.

⁶ Dunbar, Flanders: *The Scope and Potentialities of Brief Psychotherapy*. Brief Psychotherapy Council, The Institute for Psychoanalysis, Chicago, October, 1942.

⁷ Dunbar, Flanders: Abstracted from *Psychosomatic Diagnosis*, Paul Hoeber, 1943, pp. 600-605.

An illustrative case, mistakenly diagnosed as rheumatic heart disease, is the following:

CASE NO OCA 154.⁸ A married woman, twenty-eight, was admitted to the hospital, three times in quick succession, with cardiac failure; all three times on the danger list and in an oxygen tent. It was thought, after exclusion of rheumatic heart disease and other diagnostic possibilities, that she was suffering from lupus erythematosus disseminatus and would have to be kept in bed, with a probably fatal outcome.

Psychosomatic examination revealed little suggestive of organic heart disease and much of the profile characteristic of cardiac arrhythmia.⁹ She had had an early traumatic experience of a father's unfaithfulness, followed by a fracture which was interpreted by her mother as punishment by God. At puberty she had connected this incident with her own masturbation guilt when she fell and broke her ankle. After marriage she was revolted by the discovery that her husband masturbated and she suffered other marital troubles. She fell in love with a mutual friend and began an affair with him. After trying to break it off she saw him at a gay farewell party, got herself knocked down and thought she had a broken rib. The rib was not broken, but the next day she was sent to the hospital with cardiac decompensation and pulmonary edema.

The patient had an accident habit, was shy in company but had a tendency to overcompensate by exhibitionistic behavior, was extremely tense and inclined to be flighty and inconsistent, was bothered by feelings of guilt, depression and unworthiness when alone, had nightmares, suffered fear of the dark and practiced nail-biting, was addicted to excessive smoking and drinking and all her life had been interested in dramatics as an aesthetic expression.

A fourth attack followed immediately after seeing her lover at home, as a dinner guest. She insisted on seeing the psychiatrist before being sent to the hospital, although her husband and the attending physician believed it unnecessary. She thought she was going to die, and her husband was of the same opinion. A brief conversation with the psychiatrist resulted in the patient's relaxation, a normal pulse, resumption of normal breathing and a full night's natural sleep in a prone position. The next day she was so much better that she was not taken to the hospital. Shortly thereafter, she moved to an apartment of her own and regular psychiatric treatment was arranged for. In a month she was up and about, caring for her child, and four months later she had a

job in addition. An electrocardiogram, taken at this time, was normal, although the previous tracings had shown left-ventricular enlargement and some traces of coronary spasm. Six years later there had been no repetition of the attacks, although there had been no medical limitation of any kind on her activity.

Concerning her illness this patient said: "Until you made me face what was really bothering me, and showed me how I could do something about it, life was impossible except when I was sick. It may sound funny to you, but it used to be a relief to have a real pain to fight, instead of my husband and all the people I hated and felt despised me. What I used to call the knife in my heart hurt so much that it blotted out everything else, everything that bothered me. It was like being drunk but even more potent."

Where the structural damage is slight and the defenses not too rigid, dramatic improvement may be accomplished by brief psychotherapy directed toward relief of anxiety.¹⁰

In view of the relative inadequacy of our present methods of management of rheumatic fever, brief psychotherapy should be considered whenever feasible for all sufferers from this disease.¹¹

SUMMARY OF THERAPEUTIC PROBLEMS

To summarize briefly, the therapeutic implications are as follows:

Little can be done with rheumatic heart disease, except where the valvular damage is not too severe. Of course, where the valvular damage is severe the patient may be rescued from chronic invalidism if the physician can avoid playing into the hands of the patient's masochistic tendencies. More can be hoped from brief psychotherapy for patients with rheumatic fever or rheumatoid arthritis. With these patients either the quantity of energy involved in the disease process or its transformation and binding into somatic changes is smaller than in the case of sufferers from rheumatic heart disease.

The first essential with these patients is to give them a sense of security and the opportunity for an active outlet in a personal relationship with the doctor, then gradually with their social contacts and in some vocation. Cultivation of hobbies and non-functional occupational therapy are not satisfactory because, instead of relieving, they emphasize the feeling of difference and afford no chance

⁸ Dunbar, Flanders: Abstracted from *Psychosomatic Diagnosis*, Paul Hoeber, 1943, pp. 461-470.

⁹ Dunbar, Flanders: Abstracted from *Psychosomatic Diagnosis*, Paul Hoeber, 1943, pp. 585-589-593. (Personality Profiles.)

¹⁰ Dunbar, Flanders: *Psychosomatic Diagnosis*. (Chapter 6—Case Histories.)

¹¹ O. Currier McEwen, The Management of Rheumatic Fever. Bul. N. Y. Acad. Med., 19: 679, 1943.

for expressing aggression. The artificial ideal of being a good person in the family and having to swallow rage should be modified. The latter points are of particular importance in the Type B group of patients and those with serious cardiac damage.

Attention should be directed to control of environment for these patients—at least until they have gained a little more ability to cope with environmental difficulties. From this point of view, the present tendency to handle these patients in special classes in schools and in special institutions is desirable, if full advantage is taken of the opportunity for simultaneous psychotherapy which is thus offered and for training in a useful occupation. Observations of groups of children under such conditions have shown that there is usually a marked increase in pulse rate, sometimes of blood pressure and frequently even exacerbation of the illness in situations involving criticism or competition—examinations for example—or in situations arousing their sense of guilt. Yet such factors are not usu-

ally evaluated or given psychotherapeutic attention.

Although a major need is relief of the guilt relative to sexual difficulties, it is dangerous to attempt this too early. The guilt is so deep-reaching and so likely to be expressed somatically, that establishment of some sense of security is a necessary preliminary to the attempt to assist them with this problem.

Depending on the degree to which the organism-environment relation can be modified and the amount of energy bound in the somatic disorder, these patients are more or less suitable for brief psychotherapy. In all cases, however, brief psychotherapy should be based on dynamic principles with an attempt to strengthen the ego as well as to resolve the anxiety relative to their ambiguous sexual role. The persuasive authoritarian type of therapy, called the "cover-up method" by Dr. Grinker, offers little hope and usually increases invalidism.

NARCOLEPSY AS A TYPE OF RESPONSE TO EMOTIONAL CONFLICTS

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INTRODUCTION

Our purpose in this paper is to consider a group of patients who show the clinical manifestations of what is commonly called idiopathic narcolepsy and regarded as an organic disease, with a view to determining the possible significance of their symptoms as an emotional reaction to difficult personal issues and as a defense against the associated anxieties and uneasiness. This viewpoint was suggested to each of us independently, as a result of our personal observations on patients who came for examination because of typical narcoleptic symptoms, but in whom emotional issues beyond the patient's competence to handle them adequately were found to constitute the major problem. A review of these patients' stories seemed to indicate not that two conditions were present, a neurological disease and a personality disturbance, but that the narcoleptic symptoms had arisen in the setting of the already developing, distressing emotional issues and were integrally related to them. The narcoleptic symptoms seemed to function in some way to protect the patients from a threatened resolution of their difficulties along realistic lines which they

were not prepared to accept. Following out our interest in these observations, we have assembled a group of cases which constitute the material of this paper and which are presented and discussed below.

Since Gelineau, in 1880, gave the name of narcolepsy to abnormal diurnal periods of sleep, this clinical problem has been considered in a great number of papers. On the whole, these reports have emphasized the neurological aspect of the trouble, and little data have been reported concerning emotional problems in patients showing this sleep difficulty. Brain (2) states that there are two kinds of narcolepsy, symptomatic and idiopathic. Symptomatic narcolepsy is the result of head injury, cerebral arteriosclerosis, neurosyphilis, encephalitis lethargica or intracranial tumor involving the posterior portion of the hypothalamus. In these cases, it is considered that the sleep regulating center in the hypothalamus is disturbed. It is known that any type of injury in this area may give rise to abnormal sleep. However, other signs pointing to the organic nature of the difficulty are usually present.

By far the largest number of cases of narcolepsy are diagnosed as idiopathic. Wilson (7) was inclined to believe that they, too, are the result of a

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lesion in the region of the hypothalamus, even though no abnormal findings are present on neurological examination. There are no reports in the literature of lesions in the central nervous system giving rise to symptoms of typical idiopathic narcolepsy. The patients may live in good health for years, in spite of the abnormal tendency to sleep.

Willey (6), quoting a case to support his hypothesis, pointed out that sleep may be unconsciously employed as a means of resolving a mental conflict. He felt that, under certain circumstances, it constituted a form of temporary suicide.

Adie (1) stated that he had observed no defect in intelligence, nor any peculiarity of temperament in patients with symptoms of narcolepsy. He quoted Pavlov's researches on sleep as an explanation for the phenomena. However, he himself believed that the symptoms were caused by definite changes in the brain stem.

Wilson (7) advanced the idea that narcolepsy was related in some way to epilepsy. He considered the following as possible causal factors: Traumatic, psychopathological, endocrine, epileptic, toxic infective, such as epidemic encephalitis, circulatory, and pressure, including cerebral tumors. He also specified a group for which no cause had been found.

Levin (4) described four cases of narcolepsy studied at the Henry Phipps Psychiatric Clinic of the Johns Hopkins Hospital. In this publication, his interest is focused almost exclusively on laboratory and metabolic investigations, from which he does not draw any general conclusions. No data are included on the patient's attitudes or personal problems.

Daniels (3) commented upon the increasing frequency with which the diagnosis of narcolepsy was being made. He noted certain emotional characteristics observed in patients with this complaint, saying that they are frequently shy and depressed, with a tendency to avoid social relations. He mentions the irritability which is sometimes present, particularly on awakening from sleep. He found that some patients appear discouraged, some suspicious and some indifferent. He pointed out the tendency for the condition to appear at a time of life when its effects are especially likely to be demoralizing, that is during adolescence and early adult life.

With this brief survey of some of the more pertinent papers in the literature, it seems of interest to review, next, the clinical characteristics of idiopathic narcolepsy from the descriptive viewpoint. According to Brain (2), narcolepsy is defined as

sleep which is abnormal by reason of its onset being irresistible, although the circumstances are inappropriate and excessive fatigue is absent. The attacks of sleep may be numerous, occurring many times a day. They are usually worse in the afternoon. They may occur in circumstances normally conducive to drowsiness, such as after a heavy meal, or while performing some monotonous activity, such as driving a car. They may be precipitated by strong emotion. The period of sleep is usually brief, lasting for seconds or minutes. If the patient remains undisturbed, he may sleep for hours. On the other hand, he can easily be awakened, as from normal sleep.

Frequently associated with the abnormal diurnal sleep are the following disturbances: cataplexy, sleep paralysis, hallucinatory states associated with sleep, and somnambulism. In the attacks of cataplexy, the patient suddenly loses all power of movement and of maintaining posture, although consciousness is preserved. Sometimes tremor of the head and muscular twitchings occur at the onset of the attack, but these may not be present. The patient sinks limply to the ground with eyes closed. The muscles are hypotonic. The attacks last less than a minute, and recovery is rapid. They are commonly precipitated by strong emotions, pleasurable or otherwise, especially by laughter. The patient may be unable to move until he has controlled his emotions.

Sleep paralysis resembles narcolepsy, except that it usually occurs during the period of falling asleep or of awakening. Although fully conscious, the patient is unable to move hand or foot. Often he experiences intense anxiety. A touch may disperse the paralysis.

Hallucinatory states associated with sleep occur occasionally. Vivid hallucinations, more often visual than auditory, may be experienced. Sometimes they occur at the period of falling asleep, when they are termed hypnagogic. Sometimes they develop during the night when the patient is apparently awake. These hallucinations are often elaborate and terrifying. Although they seem real at the time, their true nature is readily recognized during waking life. The night terrors of childhood seem to be of a similar nature.

Somnambulism can be regarded as the reciprocal of cataplexy, in that the patient, although asleep, can stand and walk in an automatic fashion. Narcoleptic patients are liable to various disturbances of their nocturnal sleep and frequently have frightening dreams.

In somnambulism, the higher cerebral centers are considered to be asleep while the lower centers

are awake. Cataplexy has been interpreted as the result of localized sleep affecting the centers concerned with movement and posture. In sleep paralysis there has been thought to be a failure of the uniform spread of sleep over the nervous system, the levels concerned with consciousness remaining awake, while the motor and postural levels have fallen asleep. The hallucinatory states have been considered the product of a dissociation of consciousness akin to dreaming.

From a study of hospital histories and actual contact with patients we have gathered information concerning the personal problems of a number of persons disturbed by the narcolepsy syndrome. These have convinced us that similar emotional conflicts contribute to the symptoms in all cases of idiopathic narcolepsy. In the following pages we will present in detail the story of two patients whom we have followed for some time. Then we will consider the stories of four patients who were studied on the wards of the Phipps Clinic some years ago. This material is reviewed to learn if personality problems may have contributed to their symptoms. Other examples have been eliminated from the discussion.

REPORT OF CASES

Case 1. (P.T.) A case is presented in which the sleep difficulties appear to have a close relationship to profound emotional disturbances. The patient shows all the types of sleep abnormalities which have been described as associated with narcolepsy.

The patient, a single white woman of 30 years, was referred to the hospital by her parents, who were upset because she wrecked the family car when she went to sleep while driving. The patient complained, "I go to sleep; I sometimes flop, and lose control of my knees and neck, my face and jaws move, and I have the jitters in my face. I vibrate when I go to bed at night. When half asleep, I vibrate all over, and this keeps going faster and faster, like a motor. It feels like the massage of a vibrator and lasts ten minutes to half an hour. If I move suddenly the vibration will stop, and then start again. If I take a nap during the day I notice the vibration."

This patient's symptoms may be presented under the headings of the five types of abnormalities of sleep discussed above.

Abnormal Diurnal Sleep: For two years the patient had noticed a tendency to sleep a great deal during the day, and often felt that she could not keep her eyes open. When she was talking she might see double and fall asleep. If she had been talking to someone previous to sleeping, she might bring up a new subject upon waking. She also went to sleep when walking along the street. While employed she used to be required to write reports. She found that while she was asleep she would put irrelevant material into her

account. If she could close her eyes for five minutes, she awakened and felt refreshed. She had less trouble when she worked on her own, so that she could sit down and have a nap when she felt sleepy. Drinking a cup of coffee or smoking often helped to put off the sleep attacks. She often felt very sleepy, especially after lunch. She felt better in the afternoon, but found it hard to get up in the morning. In the evening she found it difficult to go to sleep, and often got up, walked around the house and sometimes mixed herself a cocktail. Recently she went to sleep in the afternoon, while calling on some friends.

Cataplexy: The patient by "flop" meant a period of weakness which she could feel coming on. If she put her head down, closed her eyes, and leaned against something, she was safe, but she might fall if she did not take these precautions. These spells of weakness came on five or six times a day, and she had fallen down about six times during the year. Sometimes she started to tell a funny story, or met someone, and the weak feeling came on. Excitement might produce it easily. This trouble also began about two years before.

Coincident with the periods of weakness and often preceding them she noticed tremors of the body, particularly of the face. These were especially disturbing when talking to someone. The weakness was marked when she was worked up to tell a funny story. On several occasions the patient was seen to have marked twitchings of the facial muscles, which preceded the attacks of weakness. She was embarrassed by these facial movements, and felt that other people noticed them. When she was working and had to correct people who were under her supervision, she noticed that her face invariably began to twitch.

Sleep Paralysis: In the patient's complaint she described the vibrations which bothered her when she went to sleep. These vibrations were frightening, and she often thought they might get out of hand, so that she could not stop them. She felt very limp after going to bed, when she noticed the vibrations, and she felt that the longer they continued, the harder it was to start movement. She had to wait a minute before she could lift her arm or turn over in bed. The vibration occurred when she was half conscious and half asleep. When she was vibrating she found it very difficult to move. If she could jerk her whole body or turn over, the vibration stopped for a while. It then started slowly again. When it became severe she had to move in order to cut down the vibration.

Hallucinatory States: The patient often had vivid impressions that someone was standing by her bed. One night she heard a step in the hallway, and saw her mother standing near the bed. The patient said her eyes were open, so that she could take in everything in the room. She then saw the door open and close and a shadow go out the door. She realized that these impressions were dreams, but they seemed extremely real to her, and in the context of the whole setting of her room. Frequently during the night she thought that people entered or left her room.

Somnambulism: The patient often walked in her sleep, opening, closing or even locking the door of her room. This occurred in relationship with particularly vivid dreams.

The patient dreamt a great deal every night, and many of the dreams were extremely frightening. She often called out and awakened her family. She said she had terrible nightmares which frightened her, and she left the light on a good part of the night.

Personal Development: The patient was the youngest of four children, having two older sisters and a brother. By the time of the patient's birth, the parents had devised a definite plan for bringing up their children, which the patient was required to accept. Thus, it was expected that she attend private grammar and finishing schools, be introduced to society, achieve a social success, and marry a man with proper social and financial standing, who was approved by the parents. Unlike her sisters, who had been very successful in carrying out the program of their parents, the patient began an active revolt against the family plans. When she was 15 years old she insisted on attending a different private school than the one her sisters attended. In spite of considerable opposition from her parents, she finally won her point. While attending school she was noisy and tended to be quarrelsome. She wished to leave this school and go to a dramatic school abroad to train herself as an actress, but her family objected strenuously to any plans of this type. The patient allowed herself to be introduced to society and received offers of marriage from men of whom her family approved, but she turned them down because she said the men were stupid.

The year following her introduction to society, the family suddenly lost their money in a financial crash. The patient and an older sister opened a dress shop in their home town. The two did not get along well, as the patient found her sister dominating. There were quarrels and she was extremely unhappy. She had finally been allowed to attend a dramatic school for the summer, but when she wished to appear in the theatrical performances in her home town, her father said that he would disown her. The patient then borrowed money from friends and announced to her family that she was going to a dramatic school whether they liked it or not. Accordingly, she left home and attended a dramatic school for two years. She then attempted to make her living as an actress with a stock company, but did not do well in this work because of the unreliability of her performance. If she were given a small part in a play, she made a brilliant success. The next week she would be given the lead, but would be unable to learn her lines, and her efforts would end in failure. She was often out of work, and attempted to support herself by writing for the radio, and working in stores. When she was completely out of money she would return home.

On these visits, her family would never refer to her theatrical career which they considered degrading. They refused to allow any of her theatrical friends in

the house. The patient would remain at home until she was able to gather together enough money to return to her professional work. While away from home she lived a Bohemian life, quite different from the one approved by her family. After these visits home, her friends told her that she seemed immature, that her personality had changed, she talked with a different accent and seemed a different person.

Two years before, it became increasingly clear that she was a failure at the work which she had undertaken. She obtained fewer engagements in the theatre, and was unable to find employment which was satisfactory to her in other fields. She stayed at one job only a short time, and then would look for something else. She had difficulty paying her expenses. It was about this time that the sleep disturbances described above began to develop. Finally it seemed necessary for her to return home permanently. She rationalized this step by feeling that her parents were older and needed her help. However, when she returned home, she found it impossible to fit into the family situation. Her parents continued to disapprove of her friends. She became sensitive to the opinions of other people whom she thought talked about her, made fun of her and considered her a failure. Her narcoleptic symptoms began to increase and medical help was finally sought.

Physical examination of this patient revealed no abnormal findings. Her basal metabolic rate was found to be normal.

DISCUSSION OF CASE ONE

Here, then, was a thirty year old, single woman whose difficulties in her personal adjustments were of years standing, while narcoleptic symptoms had only been present since the age of 28. The outstanding issue in her life had been, and continued to be, the unsatisfactory nature of her relationship to her family. At the age of 15 she began to display a need to differentiate herself from the pattern of life accepted by them. Her attitude toward them became one of revolt, and emotionally charged issues arose between them. Although at times her parents yielded before her demands for self-assertion, and she herself yielded to their plans to the extent of completing finishing school and making her debut, the attitudes of each remained rigid and contrary. As the patient became older, the tensions in their relationship increased, and she finally set out to live her life in her own way. However, from the first, she did not experience the emotional gratifications she had expected, nor was she able to achieve successfully the independent personal status she wanted, either economically or in the development of her relationships with others. This does not seem surprising, since in actuality her efforts continued to represent the struggle against her family, rather than the natural expression of

expanding emotional growth. Her early failures and temporary retreats to the family roof were apparently not too humiliating, since further attempts to demonstrate her independence along the same lines continued to seem possible. Gradually, however, the failures accumulated to a point where they became difficult to ignore. Each failure weakened her position in the family issue, and increased the tensions in their relationships. The issue persisted as strongly as ever. By the age of 28, at the time of the onset of her narcoleptic symptoms, it was becoming increasingly evident that an impasse was threatening. She had neither freed herself from the family ties, nor succeeded in resolving the issues concerned in any way. The perspective from which she viewed the situation did not make any realistic understanding possible. Formal capitulation and acceptance of the family attitudes demanded more than her pride could allow. To return home an admitted failure seemed the only possible dénouement of the crisis which was developing.

The appearance of the narcoleptic symptoms at this time when her inner tensions and uneasiness were extreme appears to have been an automatic and relief-providing reaction. The "illness" provided a new issue for concern, making it possible to turn away from the emotional problems for the moment. Furthermore, an issue involving health was one which provided a sympathetic meeting ground for herself and her family. Likewise, she was able to decrease her feeling of isolation by turning to physicians for help. An illness also provided an acceptable alibi for the inadequacies of her performance.

Apart from the general considerations, it is of interest to analyze how this particular narcoleptic reaction may have been significant in this patient's particular difficulties. It is clear that the more acutely aware she became of her involvement in the family issue, the more uneasy she must have felt. The automatic sleepiness which descended on her as a part of the narcoleptic reaction served partially to anesthetize her awareness and so functioned as a defence against her intolerable anxiety. The double vision is of interest, too, since it may well symbolize her resistance to focusing accurately on the factors in her own life which needed close scrutiny if they were to be seen clearly. She was unable to fuse the factors in her emotional relationship with her family into a realistic whole which would resolve the issues between them, since the process seemed uncertain and painful.

With regard to the cataplexy, the patient's own statement "I sometimes flop" seems a startlingly

accurate assertion of the emotional situation. The intolerable admission which she was being forced closer to by the course of events, can be calmly made under circumstances where it is literally true. By saying the words, and by literal weakness, she was able to face her failures in at least an approximate way, with consequent partial relief from anxiety.

The vibrations which disturbed her as she was going to sleep would seem to represent a release of the emotional tension, with sleep, which was held under more rigid control during the daytime. A dream which she reported, in which vibratory elements were prominent, suggests that sexual equivalents may have been present.

Case 2. (R. McG.) The case next to be presented is of interest from our present viewpoint, because the emotional problem is clearly outlined, and because the symptoms were much ameliorated during a period of psychiatric treatment. The patient was a 23 year old, colored college student (H.P.P.C., 39077) who was first seen in the surgical dispensary for an infected umbilicus. He was referred to the neurological dispensary because of his complaint that he was unable to stay awake. Neurological examination revealed a tense, asthenic boy with overactive reflexes, excessive perspiration and bilateral lid ptosis. He was then referred to the psychiatric dispensary where his personal story was obtained in detail and considered of significance in relation to his symptoms.

The patient had first become aware of an urge to fall asleep, which was difficult to resist, 6 years before, at the age of 17. During the next 4 years the desire for sleep grew more intense and it became increasingly difficult to remain awake. At one time he drove a truck off the road because he had fallen asleep. He gave up driving because he could not trust himself at the wheel. He said: "I wasn't able to shake it off." During the two years preceding his visit to the hospital, the sleepiness at times became irresistible. When awake, he felt that there was "a cloudiness in my mind." When he dropped off to sleep, "any disturbance will snap me out of it." In his college classes the sleeping spells interfered with his work, and his grades fell off.

He described one incident which might be related to an hallucinatory state. He said: "A few weeks ago when awake, I felt like I was in another world all to myself—like clouds of smoke around me, and I felt so very small—almost unconscious. I first had that sort of experience when I was a kid." He likewise described a recurrent nightmare: "I felt myself so very small and something turning round and round outside me." There was no history of sleep paralysis or somnambulism.

Personal Development: The patient stated that he had always, from childhood, felt physically small and incompetent. He had grown up in an uneducated, low

standard negro family. He had always done well in school and been a favorite of his teachers. He had finished high school at the head of his class, at 17, having done four years work in three by attending night school. He was always timid, and felt that his security lay in "brains rather than brawn." Since the age of 5 he had been preoccupied about his parentage, wondering whether he had been adopted or not. This issue became of absorbing interest to him, but he had never made any direct attempt to clear the matter up. His supposed parents had never given him any reason to think that he was adopted and he never questioned them specifically. Several times, after he was 14, he gave them openings by indirect ruses, to tell him, but they never did. At 18, he asked a close girl friend to inquire for him, but she told him to forget it and he did not carry the matter further. He could not explain his reluctance to put his questions to his supposed parents in a forthright manner, but admitted that he would be disappointed if he learned that they were really his parents. His hope was that his real parents would be "more sympathetic and understanding." He stated that his supposed parents would rather see him work than go to college. After finishing high school, he had worked for his father for two years, driving a truck without pay. He stopped this work because of the sleeping attacks. He said: "I was working with my father, and there was no economic security and no future and no chance to go out and look for another job." A high school teacher encouraged him to "revolt" against his family and continue his education. He finally saved enough by working as a bus boy to enter college where he was given a scholarship. His ambition was motivated, apparently, more by his need for economic security than from any positive interest in special fields of work. His school work did not go well and he was tense, cross and irritable. His inner preoccupation with his parentage continued, but he did not confide in anyone.

In the dispensary he recalled that, at 11, he had gone to court with his supposed parents, although he did not know why. Through the psychiatric social service, it was possible to obtain the actual facts about this boy. His suspicions that he was adopted were found to be correct and it was learned that he was the son of a white woman and a colored man. He had been legally adopted by the family with whom he lived. The present whereabouts of his own parents, or any further information about them was not ascertainable. This information was presented to the patient who seemed pleased by it. He became more comfortable and the attacks of sleep diminished and completely disappeared. He gave up the benzedrine tablets which he had taken previously, and for several months was free of his symptoms and stopped return visits to the psychiatrist of his own accord.

However, through a letter of inquiry, contact was re-established with him two years later. It was found that the sleeping attacks had again recurred and were still present, and that again he was caught up in the tangle

of his attitudes about his parentage. He said that he thought "about nothing else." He was concerned about finding his white mother and indulged in elaborate fantasies about her and possible relationships with her. He was very bitter about the attitudes of white people toward colored people. He had never gone beyond the thinking stage in his quest for his mother. He had never come to an understanding with his foster-mother about his true relationship to her, although admitting that she, more than anyone else, could tell him about his own mother. His inability to adopt any decisive attitudes was striking. He seemed committed to keeping a cloud and mist between himself and the realities of his life issues. In the last conference with him, he stated that he had, at the present time, no close relationship with anyone. He admitted feelings of terrible resentment against his foster parents, which he never showed. He seemed to blame them in some way for the emotional dilemma in which he found himself, but his attitude was one of self-pity, with no apparent impulse to attempt an amelioration of his lot.

DISCUSSION OF CASE TWO

At the time of this 23 year old patient's first visit to the hospital, narcoleptic symptoms which had been present for 6 years had been increasing in intensity for about two years, since he had entered college. His interpersonal adjustments, on the other hand, had presented difficulties at least since the age of 5. The central issue of his life had been his preoccupations about his parentage, and to the present he had not succeeded in emancipating himself from this issue so that his own independent emotional growth could proceed along satisfactory lines. There is no evidence that he ever formed any significant attachment to any other individual. His early, unformulated doubts about his parentage apparently prevented any close attachment to the couple who raised him. Certainly his attachment to them was so insecure that he was never able to confide his questionings in them and invite any realistic resolution of his worries. As he reached adolescence, his physical frailty and his timidity in relation to others enhanced his uneasiness as to how he was to find security in the world. Through the high school period he was able to keep down his anxieties by means of his scholastic achievements and the appreciation he received from his teachers.

On graduation, however, his supposed parents were unsympathetic to his further educational ambitions, and financially unable to help him. Thus, at the age of 17, he found himself in a critical and frustrated position. The security to be derived from developing his brain seemed not to be his, and a concept of himself as physically incom-

petent gave him little confidence in his brawn. In contrast to the life of a student which he had been leading, he was expected to work without pay for the man he called his father, driving a truck. Better prospects for the future did not suggest themselves to him. With the inevitable welling up of his dissatisfaction and resentments, his inner fantasies about his parentage were activated. With different—and better—parents, he might have had a different and better lot.

At this point in his development, the narcoleptic symptoms made their first appearance. He began to sleep on the job which was so distasteful to him. Finally he had to stop driving the truck because the sleeping spells created such a hazard. He was thus freed from his obligations to his father to look for other and paying work. He began to save money so that he could continue his education, thus carrying on, in his search for security, along the earlier lines he had laid down for himself. When he finally entered college, however, the neurotically defensive nature of his drive to be there left little incentive for constructive self-development. He continued to be preoccupied with his doubts about his parents, but kept his fantasies in the twilight realm of inner gratification, perhaps fearing that the loss of comfort he could derive from them as fantasies, should the test of reality prove them only that, might be more than he could tolerate. This twilight, cloudy awareness of this vital issue, constituting the core of his emotional life, seems to have spread out into all aspects of his consciousness, as evidenced by the perpetual, insistent sleepiness. The narcoleptic reactions came to his defense, protecting him from the threatening possibilities in any realistic show-down about this issue.

It is interesting that, during his two months contact with a psychiatrist through whom a show-down was brought about, to the extent of determining the actual facts about his parentage, his narcoleptic symptoms entirely disappeared. However, he severed his connections with the physician before it had been possible to help him to any basic reorganization of his emotional perspective. When he was contacted two years later, he reported the reappearance of his symptoms and constant and active preoccupation with a new set of fantasies centering about the possibilities of finding his white mother and establishing some sort of personal relationship with her. There was no evidence of any practical intention to act on his fantasies and convert them into real experience. His attitudes toward the realities in his daily life remained those of bitterness, resentment and self-pity.

The next four cases to be presented are patients who were studied on the wards of the Henry Phipps Clinic of the Johns Hopkins Hospital. These are the same four cases which Levin (4) described from the point of view of the laboratory and metabolic studies made on them during their hospitalization. Since their hospital records, in addition to the data presented by Levin, also contain personal data along the lines of our interest in this paper, it seems of interest to report them from this viewpoint, particularly since Levin's findings contributed little to the understanding of the patient's complaint.

Case 3. (A. C. S., H. P. P. C., 4488). The patient was a 17 year old, single boy who was admitted to the hospital with the complaint: "When I sit still or when I am quiet, I fall asleep, and when I laugh, I have a weakness in my knees—my knees sink down." The patient's symptoms had first appeared one year before, and one week after his discharge from a tuberculosis sanitarium where he had been for nine months. Since that time, one to four sleeping attacks had occurred daily, each lasting about four minutes, rarely as long as a half an hour. He could always be aroused easily. The attacks occurred when he was sitting quietly reading; never when he was active. Notwithstanding the attacks, he had been working successfully as a credit boy in a department store for five months.

The cataplexy began at the same time, the patient finding that when he went to laugh out loud he could only smile, and would sink to the floor. During the past year he had never laughed out loud, although his sense of humor remained undiminished. During the first month after the appearance of his symptoms he actually fell to the floor several times, but thereafter was able to "catch" himself without falling. When the impulse to laugh occurred he would have a catching sensation in his throat and his knees would feel weak.

The patient did not show sleep paralysis, hallucinatory states nor somnambulism. His aunt reported a striking personality change. While he used to be extremely good-natured, he became irritable, stubborn and argumentative.

Personal Development: The patient was the second of five children. The father died of tuberculosis when the patient was 7, and the mother, who was said to be very nervous, deserted the family when he was 8. The children were separated, and the patient went to live with a maternal aunt who suffered from anxiety attacks. The boy was always sickly. At 14 he developed tuberculosis and was in a sanitarium for nine months. On returning home, instead of his usual good nature, he appeared cranky, stubborn and argumentative. The narcoleptic symptoms appeared one week after his return home.

Personal Reactions during Hospitalization: The patient remained in the hospital only three weeks, and since the focus of interest at the time was on the physi-

ological aspects of his condition, the record is deficient as to data on his personal attitudes toward himself and toward the significant people in his life. However, there are several clues which suggest that disturbing issues may have been present. Although he is described as appearing happy and at ease, careful perusal of the nurses' notes reveal that some moodiness was present, and that on at least two occasions, on awaking from a sleep attack, he stated that he felt sad. Likewise the wide swing of his pulse rate, usually running between 90 and 110, would seem to indicate that more uneasiness was present than seemed apparent. There is no mention in the record of current family relationships, except for tension which seems to have developed in relation to his aunt, on his return from the sanitarium. However, in a catamnestic note written one year after discharge, he was reported to be living with his step-father. This would seem to indicate that his relationship to his mother remained an active issue in his life. The patient was in the hospital in 1926, and in response to an inquiry about him, a further catamnestic note was obtained in 1942. The informant was a paternal aunt who had not seen the patient for three years. She reported that prior to that time he had been living in another city with his step-father and an uncle. She stated that "he never had one job for any length of time. He liked to wander and never stayed put." Recently he had been drafted and was said to like the army life.

DISCUSSION OF CASE THREE

While this 17 year old boy had narcoleptic symptoms for a period of a year, his background and personal relationships appear to have been unstable, at least from the age of 8. Following his father's death, his mother's desertion and his separation from his siblings, his chief personal contact seems to have been with the anxious maternal aunt. From the appearance of the attitudes of resistance and irritability toward her which appeared on his return home, following the separation while he was in the sanitarium, it would seem that their relationship had not provided any basic security and affection. Although we do not know the precise issues in their relationship, it seems evident that the return to the old environment precipitated some inner crisis, and it was at this time that the narcolepsy abruptly appeared. That the relationship to his mother entered in some way, seems indicated by the fact that he later left the aunt's home and associated himself with his step-father. From the meager catamnestic data available, he seems never to have developed a personal organization and ease which would enable him to make a stable life adjustment.

Case 4. (G. C. H., H. P. P. C., 4882). This patient was a 26 year old, married, Englishman who was ad-

mitted to the hospital in January, 1927, with a history of narcoleptic symptoms since the age of 18. He stated that attacks of irresistible drowsiness which he could not ward off, had begun in December, 1918, and occurred almost daily, often several times a day, lasting from a few seconds to a few hours, depending on circumstances. Attacks occurred in church, in streetcars and in autos. He had fallen asleep while walking, even on crowded streets, invariably keeping on walking and often bumping into people. Sometimes his drowsiness would become worse for several days and he would fall asleep under almost any circumstances. Arithmetical work, writing letters, reading and listening to the radio were always conducive to attacks. At times he required a few good shakes to wake him, but usually he awakened in response to his name. He stated that he frequently dreamed. On being awakened he sometimes was perfectly alert, but at other times felt "confused," finding it "hard to adjust the mind to the circumstances." Invariably after an attack, a "depressed, heavy feeling in front of the heart" was present for about 15 minutes.

In addition to the abnormal diurnal sleep, this patient also gave a history of cataplexy, the symptoms first occurring in May, 1919. He stated that on laughing heartily, "relaxation" of the muscles of the jaw, neck, arms and shoulders occurred. His head dropped forward, his jaws dropped open, his chest caved in, and, if his arms were raised, they fell. The leg muscles were never affected. This same relaxation, particularly of the jaw, had occurred at the moment of orgasm, during coitus or masturbation. The cataplectic symptoms had not been as persistently present as had the abnormal diurnal sleep.

The patient did not give a history of hallucinatory states, sleep paralysis or somnambulism. His nocturnal sleep was described as excellent. The case record does not describe the content of the dreams which occurred during the diurnal sleep. The patient stated that, since the onset of the symptoms described, he had found it hard to concentrate and to "follow a line of thought."

Personal Development: The patient was born in London, England and was a twin. The twin brother was described as a conscientious worker who had apparently made a stable adjustment. The only other sibling was a brother two years younger who was described as doing well as a cashier. Evidences of tension in the patient in childhood are the facts that he walked in his sleep until 10, and was enuretic and had nightmares until 12. He was precocious in school and completed the equivalent of our high school education at 15. During the next several months he was kept at home by his parents, without occupation, while they tried to decide on a career for him. His father who was a civil servant wanted him to be a government clerk, but the boy thought that this would be too dull. He wanted to enlist in the naval air force and falsified his age as 18, but looked too young and was refused. Finally, he was accepted as a cadet pilot, but the armis-

tice was declared just as he was finishing his training course, and in December, 1918 he was demobilized. He was thus frustrated in the plans for the career he had chosen and it was at this time that he first began to have difficulty with the diurnal sleeping attacks. Another issue came to a head about this time too. For two years he had been in love with a girl whom he wished to marry. Following his demobilization, they began to drift apart, and within a year (1919) had broken entirely. He still referred to this as the one big disappointment of his lifetime. It was during this period that the cataleptic symptoms first appeared.

During the next few years the patient had little steady employment, as work was slack. He drifted from one job to another, working as a mechanic and selling radios. He was still thinking constantly of the girl with whom he had broken. In 1922, at 22, he was attracted to another girl whom he married two years later. She was Catholic, and he too joined this church. He had never told his parents of his conversion. She was described as frail and frigid. Because work was hard to get in England, when he was 25, the patient and his wife left for Canada. During the next 8 months, until his admission to the hospital, he had had four jobs, being discharged from each because of the sleeping spells which had become more frequent. It was because of the fact that his difficulty was jeopardizing his economic security that he came to the hospital to seek help.

Personal Reactions during Hospitalization: The patient remained in the clinic for six weeks. Physical examination and laboratory studies revealed little information of use in illuminating his difficulties. Since his condition was considered as an organic disease, the physician's notes contain no observations on his attitudes, either toward issues concerning him while he was in the clinic, or toward the personal issues of his life. However, a careful perusal of the daily nurses' notes yields some information of interest. One note reads: "Usual 'superior' attitudes toward other patients. Rather presumptuously demands consideration and applause of all on ward." In another note, the nurse reports a request he made "in his usual bold way." On another occasion, he remarked: "Please don't bother me until I finish this letter. You're always wanting me to do something." Once he jokingly remarked "I'm the most important man in this hospital." Another remark reads: "Now, don't be cross with me, will you nurse? It's so much more fun to be bad than good. Have you put me on your bad book? Please don't be cross with me—you know I'm really a good little boy." By the time he had been in the hospital about two weeks, the nurses apparently began to find him more impatient and irritable. At times his manner was sullen. Once he slammed the office door in anger. Once he refused to comply with a nurse's request, saying "Because I don't choose to." On one occasion when he was using a peremptory tone, the other patients laughed at him and he was observed to color angrily. He became sulky when he could not

have his way, a characteristic comment being: "I always get my way." His manner was frequently defensive, and he does not seem to have been liked by the other patients. His humor was described as "teasing." On the day of discharge, he seemed happy to go, but remarked: "I hate to go in some ways."

From several verbatim remarks in the nurses' notes it seems possible to make some technical deductions about this patient's attitudes toward and relationship with others. That he was uneasy and insecure, and that he had difficulty in finding and feeling acceptance was evident. The difficulties which he experienced on the ward were probably representative of his general experience with other people. He seemed able to assert himself only by adopting aggressively dominating attitudes and by creating opportunities for displaying his autonomy by minor nonconformities which created interpersonal issues and kept him on the defensive. His attitude was one of petty rebellion, and conforming appeared to him as yielding and weakening of the status he fancied for himself, rather than a natural means of self-expression. Only along impersonal lines, such as cooperating with the various laboratory tests made on him, was he able to cooperate freely and display a friendly manner.

DISCUSSION OF CASE FOUR

Here then is a 26 year old man who had had narcoleptic symptoms since the age of 18. In this patient, too, the symptoms seem to have appeared at a time of crisis in his life, namely when he was demobilized from the air force just as he was about to embark on the one career in his life which he had wanted to follow. In a sense, this crisis was a recapitulation of the situation when he had finished high school precociously at 15, and the consideration of the career he was to follow became a family issue. There is evidence that his parents were active participants in this issue, and that their attitudes and the boy's diverged considerably. At that time, the patient seems successfully to have rejected his parent's ideas and adhered to his own. When circumstances interfered with their fruition, however, following the armistice, the issue of a career and what he was to do with his life again rose up to confront him. It seems clear that he felt frustrated and had no constructive alternative plans which he was eager to act on. No data are available as to the parents' attitudes at this time, but it seems likely that they may again have put pressure on him to conform to the family pattern and enter the government service. That he did not do so, and that his subsequent employment career was sporadic and lacking in purpose or satisfaction is a matter of record. Something of the nature of the relationship between the patient

and his parents is indicated by their plans to "decide a career for him" when he was 15, and by his reluctance to inform them of his conversion to Roman Catholicism when he married.

It is interesting, too, that the cataplexy first appeared during the crisis in his love affair with the first girl whom he wanted to marry. His difficulty in accepting frustration is illustrated here, too, by his statements that he brooded continuously about her during the next three years, and that this was the one disappointment of his life. Since his marriage, the cataplexy had been most prominent at the moment of orgasm. There seems a basis for speculation, in this patient too, as to the possibility that his uneasiness was enhanced at moments of climax or crisis, and some of his tension was released through the cataplectic reaction.

From the attitudes which he showed while in the clinic, it is evident that the basic emotional problem of his life was his incompetency in his relationships with other people, and his own unrealistic, defensively assertive ideas of himself. It would seem that a good deal of his difficulty in finding satisfactory employment stemmed from his own personal inadequacies. His rebellious, superior attitudes, arising, perhaps, originally from his relationship to his parents, served to bolster his pride and prevented a realistic self-evaluation which he could not tolerate. Against the constant threat, however, of his inadequacies and uneasiness forcing themselves on his awareness, he was automatically protected by the anesthetic action of the sleep attacks.

Case 5. (A. L. R., H. P. P. C., 4862). This patient was a 20 year old, single boy from a southern mountain family, who was admitted to the Henry Phipps Psychiatric Clinic of the Johns Hopkins Hospital in 1927. He remained in the hospital for a period of three months. His complaint on admission was: "I go to sleep too much. I can't keep my muscles up and get weak, particularly when I laugh. My head and hands and knees give way." The patient had first been troubled by attacks of sleepiness three years before, at the age of 17, during his second year in a mission boarding school for mountain boys. He began to have difficulty keeping awake while trying to study. When writing he would drop his pen without knowing it, and was frequently reprimanded for "messing up" his papers. The condition became worse gradually, so that he began to skip his evening study hours. The year before admission, he fell asleep while driving a car and ran into the road bank. When walking he would feel sleepy and fail to notice things around him. Cataplectic symptoms first appeared at the age of 19, when he began to experience a "giving way" of his muscles. When reading a humorous article or telling a joke he

would experience a momentary weakness of his arms, knees or neck. At times there would be a momentary giving way of his knees. There was no history of sleep paralysis, somnambulism or hallucinatory states.

Personal Development: The patient was the oldest of six siblings and the only boy. His father was a rural mail carrier in a mountain district who was often away from home from dawn to darkness and was described as a slow, timid man. The family lived on a farm which was run by the aggressive, domineering, high-tempered mother who was said to be physically stronger than her husband. As a child he was unusually interested in athletic stunts and is described as exceptionally supple and an "amateur acrobat." He attended country schools until the age of 15, and was then sent to a mission boarding school for mountain boys, which he finished at 19. In his second year in this school his narcoleptic symptoms first appeared. His mother, in describing his personality, stated that he had always had difficulty in meeting people and that he lacked self-confidence. He had once wanted to study medicine, and later thought he would be a musician, but had never made any plans toward carrying out these ambitions.

Personal Reactions during Hospitalization: Physical examinations and laboratory findings in the hospital were negative, except for a basal metabolic rate of -34. During his three months' stay in the hospital, he wrote out a great deal of material about himself for a personality study. This material throws considerable light on some of the personal issues of his life and on the nature of his relationships with other people. He wrote that he considered himself "a green, backward, awkward dumbbell at practically everything." He said: "All my rearing was done by my mother. This, I think, is partly the reason why I am inclined to be timid and to be less self-reliant. There is something about me that makes it hard to get acquainted with people. I always feel green, not knowing how to act nor what to say. I happened to be the only boy in the family and throughout my childhood did lots of playing by myself." When he first went to the mission school "I only knew two boys there and not getting acquainted very fast nor making any special friendships I fell right in to studying. I liked most of the boys all right but many of them seemed mighty bully like." The first year in this school he made the honor roll. The next fall, on returning to school, he found that he had two new room-mates. One he admired very much for his friendliness and popularity, and in describing him endowed him with all the qualities he felt that he himself lacked. The other was "a person I never felt at home with. He was inclined to argue and ask many questions such as: 'Why did you say so and so?' This did not suit me because I was forever doing or saying something that I could not explain. I did not enjoy his company nor did I like him for a room-mate." In the notes about himself, he made no reference to plans for the future, or specific goals, and there was no evidence that he was making any efforts to utilize his

training in the school as a step toward specific later activities.

In addition to the observations on his own characteristics and those of his schoolmates, he wrote out an elaborate and impressive account of his ancestry, describing in detail the characters of 61 members of his family, including his great grandparents on both sides. In reading over this account, the members of his family seemed to fall into two distinct groups, as he saw them. One group included aggressive, wild, uncouth mountain people who were always getting into trouble. The other group were slow, quiet, timid people who seemed to have been well-behaved but ineffectual.

Personal Reactions during Hospitalization: During the patient's stay in the hospital he had very few sleeping attacks, and the cataplectic spells gradually became less intense and less frequent. His physician was struck by his "remarkable" shyness. He himself began to notice that the "giving way" feeling came at times when he suddenly became self-conscious about what others might be thinking of something he had just said or done. If he thought he had not spoken politely to a nurse, or asked for help from a nurse, his legs were likely to give way. In his relationships with the other patients, he seemed unable to express himself in even the smallest ways without self-doubt and uneasiness. Although he clogged well and was adept at acrobatics, his lack of confidence was so great that he was unable to utilize these talents as social assets. During the early period in the hospital, his uneasiness and distrust of the situation were reflected in his letters to his family whom he advised not to pay for his hospitalization, unless he was cured.

DISCUSSION OF CASE FIVE

Here, then, is a 20 year old mountain boy, of high intelligence, but remarkable emotional insecurity in his relationships with others, whose idea of himself seems to be less that he is an individual personality than that he is just one insignificant member of a family clan of 61 members, all of whose characteristics he is as familiar with as with his own. Aggressiveness and self-assertion, in this group, are associated with wildness and trouble-making, and self-inhibition seems the safe and only alternative. From childhood, the patient followed the self-inhibiting pattern. Living largely in the company of his mother and sisters, he was not directly in contact with the more aggressive elements of the surrounding mountain community. Even the skill which he developed in acrobatics seems to have represented an outlet for his physical energies rather than a way of winning status with his schoolmates. The mother dominated the family in which the father was conspicuous by his absence. The patient, in his contacts with others outside the immediate family,

seems to have been at ease only when inconspicuous. He was a bright boy, and talk of goals like studying medicine did not seem unreasonable. However, when he entered the mission school where there were opportunities to prepare himself for more advanced studies, as a result of his self-inhibiting reactions, he was unable to mobilize sufficient self-assertiveness to adhere to such a demanding goal or to any specific goal. During the first year in school, he applied himself to his studies to the exclusion of extracurricular activities and association with the other boys. By the second year, his own personal inadequacies were brought more nearly to his awareness through his relationships to his two new roommates. One roommate seemed to do so easily all that he admired but could not do that his sense of awkwardness was acutely stirred. With the other roommate who was aggressive and bullying, he was unable to establish any comfortable relationship, or even attempt to assert himself. The old reaction of self-inhibition became intensified, to the point where actual sleep attacks occurred and narcoleptic symptoms appeared.

Case 6. (E. D., H. P. P. C., 4825). The next patient was a 16 year old school girl from Michigan who was admitted to the hospital in 1927, with the complaint: "I fall down when I laugh—I would if I didn't hang on to something. I fall asleep every place, on the busses or streetcars." In this patient the cataplectic symptoms appeared before the sleeping attacks. She first noticed a feeling of weakness when laughing at the age of 13 while carrying a cup to the table on a social occasion. Thereafter, every time she laughed her knees gave way and she would fall. She was sure to fall if other people were laughing at her. Sometimes, when walking along the street, if she started to laugh she would have to sit down for a minute. When she felt annoyed or angry, she would feel the same weakness, but would not fall. The weak spells usually lasted two or three minutes and she could not speak during them.

The abnormal sleeping attacks had begun a year later, at the age of 15, and were first noticed after her morning swimming class in the gymnasium. Following this class she would feel weak, her hands would jerk so that it was hard to write and she would not seem to know what was going on about her during the next hour or two. She began to fall asleep almost every day in her classes. Soon she began to fall asleep whatever she was doing—dusting, riding on streetcars or busses, or reading. Each sleeping attack only lasted a few minutes and she awoke at once if her name was spoken.

She stated that she did not sleep well at night and had frightening dreams of people killing each other, and of someone after her. She gave no definite history of sleep paralysis, somnambulism or hallucinatory states.

Her aunt, who accompanied her, stated that recently she had spent most of her time sleeping. The patient herself seemed to feel little concern about her difficulty, and it was because her aunt felt disturbed about her that she was brought to the hospital.

Personal Development: The patient was born in Finland, the second of four children. Her father who was a sailor was drowned when she was four. During the next four years she lived with her mother and grandparents. At 8 she was adopted by a maternal aunt who had no children of her own and with whom she had lived since. When she was 12, she came with her aunt and uncle to this country, where her uncle had obtained a position as a Finnish teacher in northern Michigan. The aunt obtained domestic employment in Detroit, and the patient and uncle boarded in the college town where the patient attended school. She learned English within a year, and in her five years in this country had completed grades two through seven and was in the eighth grade. One year before admission, at the age of 15, the patient had left the college town where she had made many friends, to join her aunt in Detroit so that she might contribute to her own support by working for her room and board. She assisted with the housework in the same home where her aunt was employed, and helped care for the two children. She made no complaints about this change, and was always obedient and polite, but always admitted that she liked it better where she had the companionship of many girl friends and had enjoyed the skating and skiing. She said that she would like to go back to this town, but could not, "so it is no use." It was following the move to Detroit that the sleeping attacks had become so aggravated.

The patient's mother and three brothers were still in Finland. The patient admitted that she did a good deal of day dreaming—"that we could be at home and all together." She liked fairy stories and to read about "home, mother and families."

Personal Reactions during Hospitalization: The patient remained in the clinic for a period of four weeks. No attempt was made to investigate her personal attitudes about her life, since the focus of interest was in the physical and laboratory studies. These were essentially negative and did not illuminate the complaint problem. Her mental age by the Binet Scale was found to be 14-4, giving her an I.Q. of 92. The physician's notes indicate that she seemed pleasant and cooperative, and that sleeping attacks were fewer during the last week of her stay than the first. The nurses' notes, likewise, are less revealing than might be desired for our present interest. However, the comment "did not mix with other patients" appears several times. Also: "Had frequent clashes with G." (another patient). A frequent response to requests of the nurses to comply with certain regulations was: "Oh, do I have to do that again?" On the whole she seems to have been quiet and compliant.

A letter from the patient written six months after discharge revealed that she had returned to the college

town and was again in school there. Sleeping spells were still occurring, but were not interfering so much with her school work. Although she still felt weak when she laughed, she no longer fell down. The tone of her letter was enthusiastic as she described the various activities she was carrying on with her friends.

DISCUSSION OF CASE SIX

The central theme of this young girl's emotional life seems to have revolved about the necessity of accepting with resignation the pattern of her life as it was determined by the course of external events rather than by her own inner needs and desires. At 4, fate separated her from her father with his death by drowning; at 8, fate separated her from her mother and brothers when, probably from economic necessity, her adoption by her maternal aunt was allowed; at 12, fate separated her from Finland and even further from her family, when her uncle and aunt decided to come to the United States; at 15, fate separated her from the college town where she had begun to put in her roots and find friendships, when it seemed necessary for her to take employment and begin to contribute to her own support.

It is interesting to note that her first symptoms appeared just about a year after she reached this country, at the time when she was developing enough facility in the use of English to be expected to express herself more easily socially. During this period, she was separated not only from Finland, but also from her aunt who was employed in another town, and whose absence must have represented the loss of an habitual emotional prop. She seems to have found it hard to stand, unsupported, on her own feet in a place not of her own choosing. Her admission of the content of her daydreams as of "being at home and all together" is an indication of the direction in which some of her deep desires lay. It seems reasonable to suppose that the cataplectic symptoms coming on at this particular time may have represented a symbolic expression of her insecurity in the situation in which she found herself and which it was beyond her power, and perhaps even her conscious goal, to change.

That the sleeping attacks first became evident in association with her swimming class does not seem entirely fortuitous and may well be related to her father's death by drowning, the first event in the chain of deprivations to which she had had to adapt. That the attacks became aggravated after she moved to Detroit would seem to indicate that her attitude of resignation—"it's no use"—with which she attempted to meet changes which

seemed irreversible, was an insufficient defense against the uneasiness accumulating with each successive change. Certainly there is evidence from the hostilities which punctuated her usual pleasant manner while she was in the hospital, and from her aggressive dreams of people killing each other, that a great deal of inner turmoil and resentment existed beneath the compliant surface she presented to life. Since no effective way of expressing these resentments was available to her, the sleeping attacks, by dimming her awareness, could render them tolerable.

GENERAL PSYCHIATRIC ANALYSIS OF CASE MATERIAL

It is recognized that individuals with emotional difficulties which they are unable to resolve, develop certain patterns of defensive behavior in an attempt at adjustment. Examples of these defensive reactions are the hypochondriacal, the hysterical, the obsessive, the paranoid and the depressive. The emotional difficulties may become related to complaints in the somatic field, correlated with the different systems of the body. Common cardiovascular complaints are substernal pain, palpitation or hypertension. The symptoms may be referred to the respiratory mechanism, and the patient complains of difficulty in catching the breath, or asthma. They may be referred to the gastrointestinal system and appear as nausea, vomiting, anorexia, a feeling of distention, or diarrhea. The symptoms may involve the sexual sphere, affecting potency in men and the menstrual function in women. Another means of escape from emotional difficulty, utilizing another somatic field, namely the nervous system, is considered in the patients described in this paper.

In discussing the six cases which have been presented, two significant questions suggest themselves: (1) Is there evidence that the narcoleptic reaction, in its various manifestations, is actually a neurotic defense reaction, rather than an organic disease of the nervous system? and (2) Is there a specific pattern of conflicting emotional themes and issues in the personal lives of these patients which determines, automatically, that they will react to the resulting anxieties with a narcoleptic defense reaction? A third possible question might be added: Is the narcoleptic reaction related in any way to any of the other commonly recognized neurotic reactions?

With regard to the first question, the material which has been presented seems to constitute an affirmative answer. In each of these cases, difficult personal issues were found, and insecurities in personal relationships had been present from

childhood. In each case, the narcoleptic symptoms had not appeared until long after the personal issues were already a problem; and their first appearance was at a time of increased tension and impending crisis in the patient's life. And in each case, the patient, at the price of the handicap imposed by the narcoleptic symptoms, achieved some secondary gain through an associated de-emphasis on the life-problem, and the related anxieties and uneasiness. The appearance of the symptoms provided a new focus of attention and permitted an evasion of a show-down along realistic lines which could not have been avoided if the life-themes continued to develop without interruption along the lines already laid down.

The problem raised by the second question, namely whether a definite sequence of personal, emotional issues in the lives of these patients form a pattern into which the narcoleptic reaction fits in a specifically appropriate way, involves a consideration of material which also further illuminates the first question. It is interesting to survey these cases as a group, with a view to determining in what way significant similarities appear. When this is done, it becomes apparent that the central theme in each of these cases is the individual's driving need radically to differentiate himself and the subsequent course of his own life from the pattern of life which has been laid down for him by others and which he is expected to follow. In the first case (P. T.), the patient wishes to reject the conventional, society pattern of her family and attempts to substitute for it a Bohemian life-pattern. In the second case (R. McG.), the patient's need was to reject the negro cultural pattern in which he was raised, and the parent-figures whom he identified with it, in favor of superior parent-figures and a more refined and intellectual life-pattern. In the third case (A. C. F.), although less data is available, there is evidence that the patient was rejecting the milieu of the aunt into whose care he had been given at the age of eight when the parental home had dissolved, in favor of the milieu of the mother, at least as represented by the step-father with whom he soon associated himself. In case 4 (G. C. H.), the patient's need was to reject the civil-service pattern of life as established by his father. He attempted to substitute a career in aviation and, when frustrated in this, followed a somewhat opportunistic life-pattern quite removed from the family pattern. In case 5, this theme is more subtly represented, but nevertheless present. The patient (A. L. R.), had the opportunity and parental backing to differentiate himself from the

mountain-culture which the family represented, but himself lacked the motivation and self-confidence to do so. While away from home and in a boarding school in which he was expected to prepare himself for a professional or teaching career, his need became one of rejecting this cultural pattern of life in favor of the simpler pattern of his family background with which he was so thoroughly familiar. Finally, in case 6 (E. D.), the same theme is again in evidence. The patient was ostensibly acquiescing to the pattern of life of her uncle and aunt who had brought her away from her own family and country, but her heart was not in it, and, as evidenced by her day dreams, her natural inclination was toward home, mother and "all being together."

From the striking presence of this need for differentiation or autonomy, it seems possible to deduce that the personal relationship of the individual to the others participating in the accepted pattern is inadequate and unsatisfying. In only the last two cases does there seem to be any real effort at conformity, and in these cases adjustment is only accomplished through attitudes of "submission" or "resignation", with associated uneasiness and resentments.

However, notwithstanding the need for differentiation, there are ties which bind each of these individuals to the life-pattern which it is his inclination to reject. These ties seem to operate either through feelings of obligation and emotional dependence on those from whom he would differentiate himself (Cases 2, 3 and 6), or because the life-pattern which he resists would appear to the conventional observer, one which should be acceptable to him and for which he should even be grateful; not one objectionable enough logically to justify the existence or expression of feelings of resentment, let alone open rebellion (Cases 1, 4 and 5).

As a result of these conflicting themes—the need for differentiation from the expected pattern, as a result of personally unsatisfactory relationships with others involved, and the lack of objectively justifiable reasons for this differentiation which would be understandable to the others involved, the individual is confronted by an emotionally highly-charged issue or dilemma requiring resolution.

The basic resolution of this emotional issue along sound psychological lines, namely, a satisfactory readjustment of the unsatisfactory interpersonal relationships, does not take place. Consequently, the actions and reactions of each of these individuals constitute inadequate substitutes for

this basic readjustment, rather than new growth experiences leading to increasing self-expression and personal gratification. The resolutions attempted are seen to be bounded by two extremes: flagrant rebellion (Case 1) and an attitude of passive resignation (Case 6). Since none of the resolutions tried actually resolves anything, the individual is constantly confronted anew by his emotional dilemma. As his emotional frustrations repeat and increase, an emotional crisis develops. He feels increasingly "caught," increasingly impotent to escape and increasingly resentful. He is being forced to an awareness of his own personal difficulties and of his inadequacy in resolving them. The unsatisfactory nature of his personal relationships begins to loom too large for evasion. He is unable to alter them unaided, and his emotional reactions operate automatically. He cannot adjust; he cannot compromise; he is repeatedly defeated but cannot admit defeat. His only possible source of comfort must come from some form of protection of himself against an incisive and realistic awareness of his plight through self-deception: he cuts down on how "conscious" he is of his predicament (narcolepsy); he admits his inadequacies and evades a more realistic showdown through symbolic means (cataplexy, hallucinatory and dream experiences), and he finds an acceptable alibi (the "illness" itself).

The narcoleptic and cataplectic reactions of these patients seen as a part of the sequence of the developing emotional issues in their personal lives seem a brilliantly selected source of relief. They are dramatic enough to register on other people as a disability to be respected and sympathized with. Through contacts with physicians, they bring needed emotional support. They are not too incapacitating to eliminate the more enjoyable aspects of life. They offer a new source of concern as a substitute for more painful personal difficulties. They do not require an admission of defeat. They represent a kind of non-verbal admission of inadequacy, not incompatible with self-respect.

The predominant, subjective emotional reaction of these patients seems to be an attitude of resentment, either openly acknowledged or evident in dreams and in displays of irritability in their personal contacts with other people. This resentment, however, appears to be a secondary reaction, deriving from and protecting the individual against an awareness of primary anxiety feelings in the face of his inadequacies in handling his basic interpersonal relationships. These patients see their problem, not as one of self-inadequacy, but as one of inadequacy in the life pattern in which

they find themselves. Their dissatisfaction is not with themselves, but with what is expected of them. The resentment which they feel motivates them in their efforts to differentiate themselves from the irritating life pattern in favor of some alternative way of life. So long as their efforts are partially successful, no anxiety leaks through. As failures accumulate, this line of defense for keeping the anxiety in abeyance becomes increasingly ineffectual. It is at the critical point, when the primary, anxiety-laden difficulty begins to break through and demand recognition, that the narcoleptic reaction seems to appear as a second line of defense. Any further advance into the sphere of awareness, of the unwelcome realities is blocked, and the necessity of meeting the fundamental issues face to face is evaded.

It is interesting to speculate as to whether the narcoleptic reaction is related to any of the other types of neurotic reaction which are familiar in clinical experience. In reviewing these reactions, the hysterical stands out as having many characteristics similar to those found in the narcoleptic patients. The blotting out of awareness of unpleasant features of the current situation and of threatening anxiety feelings, and the occurrence of symbolically significant symptoms may be mentioned. Unlike patients who show an obsessive reaction, these individuals are not concerned with excelling, or maintaining the approval of others, but with differentiating themselves from others. Thus, an obsessive reaction would not function with equal appropriateness in the neurotic adjustment of these patients. Likewise, while the function of the narcoleptic reaction in offering an "illness" as an alibi is similar to the hypochondriacal patient who uses his difficulty to increase his dependence on the people close to him, the narcoleptic patient does not exploit his incapacitation in this direction. He retains his goal of differentiating himself from the others in his circle, using the illness as an alibi for failure to do better along the alternative lines he has chosen.

GENERAL DISCUSSION

Narcolepsy has previously been studied by neurologists who thought there was a lesion in the central nervous system involving the sleep centers, particularly in the region of the hypothalamus. It is very clear that injuries in this area would give rise to abnormal sleep. In organic cases there are other signs of disease of the central nervous system and of a disturbance of the function of the hypothalamus which can be readily recognized. On the other hand, in the cases of idiopathic narco-

lepsy, there are no signs of disease of the central nervous system; instead there are distinct indications of emotional disturbances.

It has been thought by some that these patients showed a deficiency in the activity of the thyroid gland, and the basal metabolic rate has been reported to be low in a certain number of cases. In the first case reported in this study, the basal metabolism was said to have been minus 25 and minus 29 as registered by a physician in another hospital. However, when the patient was seen here, her basal metabolic rate was normal. It is possible that the low rates reported are dependent upon the fact that these patients are frequently so inactive, and not primarily dependent upon any change in the thyroid secretion. Treating these patients with thyroid extract has had very little influence upon the course of the disease.

Many of the patients who suffer from narcolepsy are overweight and they often gain weight rapidly after the sleeping attacks begin. When seen, they may have a sleepy expression, with a ptosis of the eyelids. These changes might be considered to be due to an injury in the hypothalamus. However again, it is probable that the gain in weight is related to the inactivity of the individual and the appearance of the eyes a manifestation of the tendency to sleep.

Richter (5) demonstrated one physiological abnormality in patients with narcolepsy. He showed that the average daily skin resistance was much higher than in normal persons, frequently being as high in waking states as in normal subjects during deep sleep. The resistance showed extraordinary fluctuations from one extreme to another, and from moment to moment. Resistance increased rapidly to a high level when the patient was left undisturbed in a quiet place for only a few minutes, whereas in normal subjects under similar conditions it tended to decrease.

The treatment of narcolepsy has always been unsatisfactory. The patient may drink any amount of coffee without having any effect on the sleeping attacks. A few years ago, ephedrine came into vogue as a drug which diminished drowsiness, and many patients with narcolepsy were improved by taking it. More recently, benzedrine sulphate has been used with still better results. However, it is likely to keep the patient awake at night also. This administration of stimulants is, however, a palliative measure only, offering temporary symptomatic relief. From the material which has been presented in this paper, and from the conclusions which have been drawn it seems possible for the first time to extend to these

patients a more fundamental and specific therapeutic approach to their difficulty. Even in our limited experience in the psychotherapy of these patients, they have proved responsive to this approach and an amelioration of the narcoleptic symptoms has occurred.

SUMMARY

A careful analysis of the personal histories of patients showing the clinical syndrome of idiopathic narcolepsy indicates that this condition is a personality reaction to emotional issues, rather than an organic disease as has formerly been assumed. The symptoms of excessive diurnal sleep, cataplexy, sleep paralysis, somnambulism, nocturnal hallucinations and frightening dreams, which occur singly or in combination, appear to be neurotic defenses, with symbolic significance, against primary anxieties associated with difficulties in realistic adjustments in personal relationships with others. The narcoleptic syndrome as a neurotic reaction seems similar in many respects to the hysterical reaction.

Patients showing the narcoleptic syndrome have in common a characteristic background of emotional conflict. They feel caught in a life-pattern to which they are expected to conform, but which they deeply resent. They become motivated by a need for autonomy and for self-differentiation along

the lines of some alternative life-pattern of their own choosing. They are frustrated in their efforts to achieve this, because of the actual psychological ties which bind them to the life-pattern which they feel impelled to reject. In the tensions of the resulting emotional dilemma, the narcoleptic symptoms appear. As a result, a realistic showdown, with its associated anxieties, is avoided, and a substitute and more acceptable source of concern is provided.

In our experience, these patients have proved responsive to psychotherapy which should provide a fundamental approach to their difficulty.

BIBLIOGRAPHY

1. ADIE, W. J.: Idiopathic narcolepsy. A disease sui generis, with remarks on the mechanism of sleep. *Brain*, **49**: 257, 1926.
2. BRAIN, W. R.: Sleep: normal and pathological. *Brit. Med. Jour.*, **2**: 51, 1939.
3. DANIELS, L. E.: Narcolepsy. *Med.*, **13**: 1, 1934.
4. LEVIN, M.: Narcolepsy (Gelineau's syndrome) and other varieties of morbid somnolence. *Arch. Neur., and Psychiat.*, **22**: 1172, 1929.
5. Richter, C. P.: Pathologic sleep and similar conditions. *Arch. Neur. and Psychiat.*, **21**: 363, 1929.
6. Willey, M. M.: Sleep as an escape mechanism. *Psychonal. Rev.*, **11**: 181, 1924.
7. Wilson, S. A. K.: The narcolepsies. *Brain*, **51**: 63, 1928.

ON CERTAIN PSYCHOLOGICAL ASPECTS OF ELECTROSHOCK THERAPY

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I. THERAPEUTIC CONSIDERATIONS

A. General indications. Since the earliest reports of the use of electroshock in the treatment of mental and nervous disorders, there has rapidly accumulated a considerable volume of clinical data from which some fairly reliable criteria for the selection of suitable cases can be set forth. Without such careful selection of cases no reliable judgement as to the value of the method can be arrived at, and extravagant hopes must soon give away before scepticism and disillusionment. The fact that in selected cases a proper application of the treatment may bring about an improvement or

apparent recovery in an amazingly short period of time offers the inducement to every busy and enthusiastic therapist to experiment in the extension of the method to cases in which our present experience could forecast an almost certain failure. The ease of handling the apparatus is such that an overburdened practitioner or hospital superintendent might well be seduced into a preference for the electric switch over the more laborious and time-consuming effort involved in patient hours of psychotherapy. The dramatic quality of the results so often achieved makes good copy for articles in newspapers and magazines and for the columnist or broadcaster who is on the look-out for some new and exciting topic. Hence both medical practitioner and public will tend to build new castles in Spain and to hope that at last the panacea for mental ills

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has been discovered. Man loves magic, be he patient or physician, and an electrical current which shocks into unconsciousness and convulsions, yet is capable of producing apparently miraculous benefits, comes close to that for which we all have some degree of longing.

The other side of the medal can be seen in the attitudes of many psychiatrists, notably those whose main interest is vested in the theory and practice of psychoanalysis. The question might well be raised whether the objections so often formulated by these specialists may not have "unconscious" as well as rational grounds for their construction. If a patient can be restored to his former efficiency after three to four weeks of specialized electric treatment, the theory that such a patient needs a long period of deep psychotherapy would seem to be of dubious validity.

Needless to say the truth probably lies somewhere between these extremes of enthusiasm and scepticism, and cannot be fully defined until more years have passed, and until more patients have been treated with electroshock and followed up through periodic observation. In the meantime, however, there are enough guideposts already established to enable the therapist to proceed with confidence in certain cases, with caution in others, and with scepticism or refusal in the remainder. Up to the present time favorable reports have been published in the treatment of the following categories:

- I. Involutional melancholia
- II. Manic depressive psychosis
- III. Depressions of various type
- IV. Schizophrenia, especially the paranoid type
- V. Psychoneuroses in schizoid personalities.

Summarised case histories of patients falling within these categories will be found at the conclusion of this paper, together with certain observations on the nature of their reaction to treatment, both before and after the administration of shock.

B. Attitudes of the patient. In the series of cases which we have treated we have found at least four different types of attitude expressed towards undergoing the treatment, as follows:

- i. Urgent insistence.
- ii. Strong objection.
- iii. Apprehensive acceptance.
- iv. Passive submission.

It has been our experience that most patients are either openly or secretly eager for the treatment, or can be persuaded to take it without too much difficulty. Only in cases where paranoid fears were

expressed or latent have we had any difficulty in overcoming objections at the last moment, and in rare cases has it been necessary to employ physical force. One case, a young woman with schizoid personality and severe anxiety neurosis, possibly masking latent paranoid ideas, after persuading us that she was not afraid to undergo the treatment and professing great hopes of benefit from it, refused to take more than two treatments, despite all our persuasiveness and reassurance.

In this case the reaction seemed to be due to a deeply ambivalent attitude towards life and death, the treatment representing electrocution for her sins, and the recovery period a return to life which she was unprepared to accept. Consciously she approached the treatment with the attitude of a child "taking a dare," and when she found that there was no immediately appreciable result she discarded the idea of completing the series. Thus she expressed her disappointment in two ways. The shocks neither brought her the final respite from anxiety and guilt feelings through the peace of death, nor gave her enough confidence in her own courage to free her from the impact of other uncertainties and from the anxiety which they created (Case No. 6).

Not far removed from such a mechanism is the attitude obviously held by some who express eagerness for the treatment, which is apparently due to the secret belief in magic and in the power of the doctor-father to exercise such magic. The patient who is under the spell of such a phantasy feels relief in the thought that she will no longer need to struggle, that the omnipotent father will cast his magic spell upon her, and that she will thus be instantaneously healed of her anguish. In one case of our series (Case No. 4) such a mechanism was plainly discernible, and seemed to us to represent a symbolic fulfilment of her wish for sexual gratification, expressed verbally as follows: "Please give me the treatment: I am sure it will cure me." Thus is the hope of fulfilment naively expressed.

In some instances the gratification anticipated is of a clearly masochistic character. The treatment is desired because it is felt to be a fitting punishment acceptable from the hands of a trusted and kind doctor-father, who really wishes to do no injury, but to temper retribution with mercy. Such reactions are to be seen in severe cases of involutional melancholia, with obsessive perseveration in the conviction of sin. It is in just these cases that the most amazing and dramatic improvements have been reported, with apparently complete restoration of ego function. The question might well be

raised whether in young people showing similar morbid phantasies the use of shock treatment might not serve only as a temporary release of these morbid desires, and thus act merely as a palliative. The ego formation might well be too incomplete and chaotic to be able to take effective hold on life, and an early relapse could be expected.

Still one more attitude is not hard to perceive in some of those who become interested in having treatment. This is the attitude of the competitive child who does not wish to be left out and who feels that the other children are getting more attention. Patients in a group are quick to notice the heightened interest in doctors and nurses, and the greater attention paid to those who are having electroshock treatment. By requesting the doctor to give them the treatment they are trying to say "I am just as nice as they are. I too will take the treatment so that I can show you how much better I can do than they do. Then you will love me even more."

From this description of a variety of attitudes taken towards electroshock treatment it must become clear that these attitudes may point up quite sharply the essential psychodynamics of the illness, and that it is the duty and opportunity of the psychotherapist to investigate the attitude of each patient to the fullest possible extent before proceeding with the treatment. If he is not clear in his mind as to what these psychodynamics are, he is indeed walking in semi-darkness when he advises or uses electroshock. This viewpoint may be scorned by many neurologists and others who find in electroshock a quick method of achieving dramatic results, provided they follow certain rules of thumb in their application of the method. While such practice cannot be condemned as unethical, it might well be criticised as unscientific, since no interest is expressed or followed out in the whys and wherefores of the improvement or lack of improvement. Furthermore in many instances these physicians do not follow up their cases or make exhaustive and prolonged studies of after effects.

C. Positive indications. Electroshock has become an invaluable aid in the therapy of emotional disorders. It is well to recognize that its established value rests on widely different bases, as follows:

First, it may create a quick and dramatic improvement in cases whose type or phase of illness renders them inaccessible to psychotherapy.

Second, when psychotherapy has been wholly or partially unsuccessful, it may produce a marked improvement, even if temporary, and so make the difference between relative invalidism and relative

health. In many such instances relapses may not occur for some months or even years, or a new attack on life may become possible, leading to a re-integration of the ego. Relapses may frequently be successfully aborted by repeating the treatment. Furthermore, acute paranoid ideas may disappear from the mental scene, and so lead the untutored to believe that the cure is complete. Careful observation, however, will reveal that such patients are not fundamentally changed and will tend to relapse unless effective psychotherapy can be used as a follow-up.

Third, as this last comment suggests, the partial restoration of ego function, which is so often manifest after shock treatments, may render the patient accessible to effective psychotherapy, and so provide an essential first step on the ladder of re-integration.

If we regard the above alternatives as fundamental considerations to be taken into account before electroshock is prescribed, it is easy to see that such a prescription should not be given except after careful study of each case, and that the decision should be left in competent psychiatric hands. The method is still sufficiently new for us to be conservative in our estimate of possible later effects on the central nervous system, and to keep us on our guard against the temptation to discard old techniques in favor of new without taking careful stock of our reasons for doing so in each instance.

II. REACTIONS TO TREATMENT

In evaluating the patient's reactions to electroshock we have to consider them under three heads:

- A. Reactions of anticipation.
- B. Immediate results.
- C. Remote results.

A. Since the first of these reactions has already been considered above in connection with the discussion of therapeutic indications, we can pass on to a survey of the immediate and remote reactions to the shock treatment itself.¹

¹ The apparatus used in this series of cases was the latest model manufactured and distributed by the Rahm Instrument Co. of New York City. The initial dosage used was 85 volts and the duration 0.2 second. If the first shock produced a petit mal reaction, the voltage was at once increased while the patient was still on the table, and the shocks repeated until a grand mal seizure was produced. It was our practice to increase the voltage rather than the duration of the shock when a grand mal attack was not induced. In no instance was it necessary to

B. We were particularly interested in observing the immediate after effects of the shock, that is to say the waking remarks and behavior of each patient. For each one these seemed to be constant in quality and therefore predictable, and we came to feel that these immediate reactions accorded well with the disturbances of the unconscious mental life which formed the psychopathological pattern in each case.

These reactions seemed to fall into certain distinct and readily recognizable categories:

Categories of Reactions

i. *Combative.* The patient can hardly be held on the table. He struggles violently with arms and legs, pushes the attendants away, throws his head wildly to either side, and rolls his eyes as if in a murderous fury. This phase continued in some instances up to 15 minutes, and could not be considered to be due to the protraction of the convulsive state. It gave, on the contrary, every evidence of a release of emotional excitement, similar to that seen in alcoholic delirium or under anaesthesia. Case No. 2 might be considered an excellent example of this type of reaction. His repressed hostility and criminal drives seemed to be temporarily released by the shock and the momentary extinction of his powers of inhibition (super-ego). It was interesting to hear him say in a subsequent analytic hour that he felt he needed only a few more such treatments to be cured.

administer more than three shocks before a grand mal seizure was brought on. Early experience with the petit mal seizures had convinced us that the mental confusion and disturbance which followed tended to act as a source of discouragement and anxiety which were usually lacking after the grand mal seizures. Furthermore, no definite clinical improvement was noted to follow in cases where only petit mal seizures had been produced, a finding which does not agree with the findings of some other workers in the field. Each patient has his or her individual threshold for convulsive reactions, so that the voltage and time have to be adjusted to suit each case. In general it may be said that after the first two or three treatments the optimum dosage can be determined without difficulty. In some instances the threshold seemed to rise as the treatment progressed requiring a further increase in voltage or time. In others the contrary seemed to be the case, so that with the same dose a more severe reaction supervened. However, it is possible that this effect was superinduced by increasing objection to further treatment. The treatments were given three times weekly and in almost all cases were limited to a series of ten.

ii. *Erotic.* The patient curls up or cuddles up to the attendant, reaching out the arms to embrace his neck, and laying her head on his breast. She tries to kiss him, wants to sleep in that position, looks up with an expression of loving rapture. She may make bodily movements suggestive of intercourse. Case No. 3 afforded a striking example of this type of early reaction. A glance at the case summary will show how it expresses the currents of emotion so clearly demonstrable in the analytic treatment.

iii. *Euphoric.* The patient smiles happily or mumbles an enthusiastic "Gee Whiz!" As she becomes more fully conscious she acts as though all her problems are now solved and the world looks rosy. A good example of this reaction was seen in Case No. 5. This patient had expressed repeatedly an urgent desire to be given shock treatment, begging the psychiatrist repeatedly to begin the series. Her euphoria during the day following each treatment was remarked by everyone. She was at first elated, and passed through a hypomanic phase of singing and shouting, later becoming serene and content, as if she had been given everything she craved.

iv. *Placid.* The patient lies quiet and relaxed, looking around her with wondering eyes as she comes back to consciousness. There then follows a period of varying length in which she remains in a drowsy, relaxed condition on the couch, finally getting up as if from a refreshing nap. This reaction was seen in Case No. 7.

v. *Startled.* One patient, an elderly woman with a severe involutional melancholia, whose reactions to each shock were amazing in the degree of clinical improvement which they evinced, invariably sat up straight the moment consciousness returned, held her hand over her mouth as if horrified at herself, and looked from the doctor to the nurse as if expecting one or both to reproach her for her behavior. This patient had gone through a period of marked regression in which she had lost all control of her sphincters. As her clinical condition improved she continued to have occasional "accidents," which evoked a reaction of shame and apologies. During the shock treatment she always emptied the rectum, and it seemed as though the startle reaction implied recognition of the fact, with fear of punishment such as she had probably experienced during early childhood, and, possibly, during the deeply regressive phases of her recent illness. For history see Case No. 8.

A review of these marked differences in immediate reaction to shock treatment suggests a rich field for future observation. The deeper conflicts

of each individual seem to be expressed at the moment of returning consciousness. In only one instance did we observe a marked change in physiological and psychic reactions during the treatment series. In this instance the patient, a married woman of 43 years of age, who had developed a psychosis of the manic-depressive type, with mixed symptoms of depression and elation, had shown at first a reaction of the erotic type. After the 9th shock, although the convulsive dose had been held constant for the six previous shocks, she exhibited shallow respirations, with some intermittence, not unlike Cheyne Stokes breathing, and remained asleep for about two hours. Following this treatment she complained of headache and malaise for the first time (Case No. 11).

It has been our experience that the length of the recovery period is very variable. In one instance the patient returned to full consciousness within a minute or two of the final convulsive spasm, sat up without comment, and walked off quite naturally into an adjoining room. In other cases the recovery period lasted as long as three hours. The average duration seems to be from 20 to 30 minutes, but experiments with finger painting suggest that even in these quick recoveries the effects last longer than outward signs seem to indicate, and do not clear up entirely until an hour or more has elapsed. In those cases where the recovery period is prolonged the most marked feature is a protracted sleep. If the patient is awakened forcibly he continues to feel drowsy for many hours.

Immediate sequelae of the recovery period include headache, lassitude, confusion, and loss of recent memory. These vary in their severity, and may be almost, if not entirely absent. The most regular of all these signs is loss of recent memory, which may persist, in decreasing measure, over a period of two or three months. This symptom frequently causes the patient distress and anxiety. The acute amnesia usually clears up in a few hours. While it lasts the patient may have acute anxiety attacks. Patient No. 3, for example, would shout repeatedly: "Where am I? Who am I?"

A rather dramatic effect of shock was noted in patient No. 1. This man used to visit his girl friend every other afternoon. He had been in conflict for a year over whether he should ask her to marry him. Two hours after the shock, when asked if he would like to see her this same afternoon, he replied: "What girl?" Two hours later he again remembered her and was able to pay her the expected visit. Subsequent circumstances proved that he did not really wish to marry this girl, a fact

which throws an interesting light on the course of the acute amnesia.

This case, perhaps, is an exceptional one, in that the acute amnesia had a profound but fleeting effect for a few hours on the conduct of the patient. In most cases no gross change of behavior was noticeable, except in so far as it reflected a change in the mood level of the patient.

C. Remote reactions.

i. *Mood level.* Probably the most striking of the remote or lasting effects of electroshock treatment, in cases where disturbances of mood level are significant in the clinical picture, is the removal or lessening of the pathological mood whether it be depression or elation. In involutional depression the return to a cheerful outlook is as amazing to the family and to the physician as it is to the patient. In one case, where the disturbance was of a recurrent type, and where the depression was mixed with phases of elation in which more or less systematised delusions of erotic type were present, this mixed condition gave way after three treatments to a phase in which the mood level seemed normal and consistent, despite the fact that there were marked mental confusion and amnesia for recent events. For case history see Case No. 11.

In Case No. 7, what was obviously a deepening depression was halted, and a progression towards gradual recovery, in which psychotherapy played a large part, rendered possible.

In Case No. 5, the prevailing mood of depression, which seemed to color all the thinking, and which manifested itself in emotionalism, confusion, discouragement and lack of ability to concentrate, was replaced by a mildly hypomanic outlook, which eventually led to a decision to discontinue all psychiatric contacts—in other words, a flight into health. The psychodynamics, into which the patient had developed considerable insight during the depressed phase, were completely ignored, and the patient again began to act out her psychopathic tendencies as if no insight had ever been acquired. This result, while apparently satisfactory to the patient and her friends, was disappointing to us, and suggested the need for careful consideration before sacrificing an obvious gain in psychotherapeutic progress to a spectacular relief of discomfort. We were reluctant to embark upon the course of shock treatment, but did so when it became apparent that the family was becoming impatient and might have forced discontinuance of treatment, a threat which the patient was not able to meet, and which might well have precipitated a suicidal depression.

ii. *Ego restoration.* One of the most satisfying of the observations to be made in connection with recovery following electroshock treatment is the obvious return of self-confidence, initiative and impatience to get back into life. Profound discouragement disappears, doubt of the physician's ability to help is replaced by gratitude and confidence, and a tendency to seclusiveness or withdrawal gives way to a desire to remake human contacts and to take part in what is going on. Under the impact of this new-found psychic security the patient is often able to face and understand trends in his personality which previously he had shunned, or had evaluated as irremediable, and to look upon them as obstacles which could be overcome or reduced to minor significance.

The knowledge that he has been able to sustain the severity of the shocks themselves may well be a factor in giving him renewed self-assurance, and a belief that he will now be able to overcome the disappointments and frustrations which had caused him to become ill. Whereas before he was in deep anxiety, feeling that he was unable or did not deserve to enjoy the satisfactions which others achieved, he becomes confident that he can at last hold his own.

A good example of this effect may be found in patient No. 1. This man was able to decide that he would not marry the girl whom he had courted for over a year, since he was sure that he could find a more desirable mate, some one more attractive, more beautiful, more cultured. He also developed a sense of increased virility, and a greater sexual potency, a result which we have observed in other patients.

iii. *Insight.* Whereas in certain instances, as above mentioned in the case of patient No. 5, a blurring of insight may result from the shock treatment, it is more usual to find, once the immediate results of treatment have worn off (fear, amnesia, confusion), that the patient awakens to a degree of insight not previously achieved, and is therefore more interested in the ideas of the psychiatrist and more cooperative in his efforts to obtain psychological help. He is better able to test reality, and to detect the influence of his own irrational drives and prejudices. He begins to sort the wheat from the chaff. He realizes that he can no longer "cheat himself"—an expression used by patient No. 3—with a variety of skillful defence mechanisms. He is shocked out of them.

iv. *Memory.* Memory for names is often unreliable for an indefinite period, but most of the disturbance of recent memory clears up within a

few months. There was never noted any serious disturbance of remote memory. In some cases there was apparent a definite retrograde amnesia.

III. THEORETICAL CONSTRUCTIONS

The mechanism by which this violent and sudden change is produced is still of course a subject for speculation. There is always the danger that scientific inquiry may fall between the Scylla of psychological fervor and the Charybdis of organic conviction. To what extent the physical shock to the structure and chemistry of the brain cells may be responsible for a different psychic outlook, or to what extent the psychological reaction to the treatment and its obvious mental effects may dispel the fear of being sentenced forever to a treadmill of mental distress, and so may open the door to a new life, are questions which need not concern us. Only when more and more observations have been made, more extended discussions held, to focus attention on the fields where further inquiry is indicated, and more perfect instruments of precision developed to enable us to measure neurophysiological and neurochemical changes, can we expect to come near the answers.

Whatever may be the exact nature of the partnership between psyche and soma, it may safely be said that this Siamese twin of human adaptive organization may in times of greatest stress fall back again upon psychosis as the last ditch of defence against seemingly overwhelming odds. Since this almost total surrender is characterised by a pathological phantasy structure, it would seem that electroshock, like other methods of violently shocking the nervous structure of the brain, has its most devastating effects on the association mechanism. Experimental neuro-physiologists have demonstrated that associations of recent origin are more easily broken down by reconditioning procedures than those which have been long established. The same principle is observed in operation in the course of any psychoanalytic treatment. Violent interruption of the associative pathways, therefore, would seem to topple the structure of pathological superimposed associations and to reinstate the more orderly pattern of associations through which the mastery of reality is achieved. Since the effect of the shock is obviously selective in character and seems to leave little trace of lasting impairment of cortical functions, it might be compared to the selective effects of X-Rays on neoplastic tissue, and their relative innocuousness for the healthy protoplasm that immediately surrounds it.

The fact of impairment of recent memory has been looked upon by some authors as the essential factor in producing a change for the better in the patient. We are not entirely in agreement with this theory, despite the fact that in two cases a complete amnesia for the psychotic experiences occurred (Cases Nos. 9 and 10). We would suggest, rather, that a more definite repression of conflict is made possible through the weakening or destruction of the phantasy defences, and that for this reason the more entrenched the phantasy the more treatment is required to achieve beneficial results. Such an explanation would accord with clinical experience that schizophrenic cases need a more extended series of shocks to insure good results than is customary with the affective psychoses.

Above all, it cannot be too strongly emphasised that electroshock treatment does not "cure" a mental disease in the same sense that quinine cures malaria by destruction of the plasmodia. The tendency of severe cases to relapse must be constantly borne in mind if over-optimistic conclusions are to be avoided, and all possible safeguards set up to bring about as lasting a result as possible. Such safeguards include giving a full course of 10 or 12 treatments in affective disorders, and about twice as many in the schizophrenic group. The other principal safeguard is the employment of skilled psychotherapy as soon as the patient is well enough to profit from it.

In many cases repeated courses of shock treatment can be used with benefit, particularly if definite but transient improvement has resulted from the first series. Even in the most advanced cases of involutional melancholia this technique may bring about striking remissions of varying length, and so may be of value as a palliative procedure, or as an emergency aid where a period of better contact is needed during the long-awaited visit of a dear relative, or for some other special occasion. Such evanescent improvements may be frequently achieved through the administration of a single shock treatment to patients who have had more than one series and have still shown a tendency to relapse (Case No. 8).

IV. TRANSFERENCE PROBLEMS

Since with certain of the patients in this series the electroshock treatment was administered by the psychiatrist who was responsible for the psychotherapy or was conducting a concurrent psychoanalytic investigation, whereas in others the psychotherapy was conducted by a different psychiatrist, an excellent opportunity was given to

observe the effects of the shock treatment on the transference or patient-physician relationship. A more extended discussion of this phase of our experience will be given in a separate paper. These problems presented themselves for consideration.

First, would the aim of the psychotherapist to render his patient free from the magic beliefs of childhood be overthrown by a resort to seemingly magical methods of "cure"?

Second, if the treatment were felt to be a punishment and gladly accepted as a means of atonement, would such a masochistic gratification impede rather than forward the aim of the psychotherapist to expose and destroy this tendency?

Third, in view of such theoretical possibilities, would it be inadvisable to place the responsibility for the shock treatment and its effects in the hands of a psychiatrist who was at the same time responsible for the psychotherapy, or should the two procedures be conducted by separate individuals?

If one were to be guided by the strictest interpretation of psychoanalytic principles the answer would seem self-evident: by no means should the two procedures be conducted by one and the same individual. From the standpoint of strictly formal technique, the interjection of such positive aggressively active measures in the midst of a psychoanalytic treatment might be considered as an abandonment of the psychoanalytic treatment for other methods.

In practice, however, and from the standpoint of certain of our observations, such judgement would seem too absolute, since in some cases of this series (Nos. 1, 2, 3) psychoanalytic interviews were continued both during and after the series of shock treatments without any evident harmful effect on the course of the analysis. Even the dream material did not indicate the presence of any new unconscious formations. If anything, there was a strengthening of the positive transference to the analyst who had safely steered the patient through these dangerous experiences, and in many instances the course of the analysis was hastened and facilitated rather than the reverse. On the other hand, in one case, which has proven refractory to psychoanalytic treatment, after an initial improvement, the electroshock treatment, although productive of transient betterment in behavior, increased the negative character of the transference for a considerable period (Case No. 12).

To sum up, it is our opinion that it is preferable for the electroshock to be administered by someone other than the psychotherapist, but that in some instances this double role can be carried without

prejudice to the progress of a psychotherapeutic plan, or even of a psychoanalytic treatment.

CASE HISTORIES

Case No. 1. M. D. 26 years of age, male. Patient had been receiving psychotherapy for two years for schizophrenia. He had no delusions nor hallucinations, no stupor, no ideas of grandeur, reference nor persecution. During all this time he had been able to keep up his profession. He was an example of those cases which impress the psychiatrist first as a psychoneurosis, with an extreme fixation on the mother and a very outspoken castration fear felt towards the father. The patient was intelligent and cooperative; his psychotic trends appeared essentially in the shallowness of his emotional life. His homosexual drives were hidden behind several friendships with highly neurotic girls with whom he was able to have sexual intercourse, resulting in strong feelings of guilt. A year before this report, he had received ambulatory metrazol treatment (10 sessions) with a rather unsatisfactory result. However, during the following period of intensive psychotherapy, a gradual improvement in his condition was evident. After a year of interruption, the patient came back for more psychotherapy, combined with electroshock (10 sessions). During the weeks following this treatment, the patient felt much more virile, self-confident, elated, hopeful and cooperative. However, this spectacular improvement gradually subsided. There is no doubt that the number of sessions should have been increased. However, the patient, for the time being, had postponed further treatments for economic reasons.

Case No. 2. A 21 year old lad of highly neurotic stock. There was a strong fixation on both the mother and oldest sister. During the psychoanalytic treatment he impregnated a girl (who later was treated in Bellevue for a suicidal attempt and classified as a borderline case) in order to prove his manhood to his parents and to the analyst. He had the phantasy that the girl, during intercourse, sucked the strength out of his penis. He was a paranoid homosexual, though no overt homosexuality had been practiced except mutual masturbation in early childhood. He was working in a shop which was owned by his sister and brother-in-law; here he sat, as if in the womb, opposing at the same time his sister's husband and hating him, because he was afraid to submit to his own homosexual drives. This hostility was very strongly expressed in the transference situation, blocking any improvement for a year. Patient had 10 electroshock treatments with the following result: he acknowledged spontaneously that he had fought the psychiatrist on the transference basis; he felt that if he could have just a few more shocks, he would be completely cured: he was able to give up his job with his sister and to work satis-

factorily with strangers. He had several successful relationships with other girls, though the emotional side of his sex experience was still not completely normal. He looked more virile and stopped stammering in his hours with the analyst, a symptom of his fear of castration which had previously been outstanding and constant.

Case No. 3. Female 22 years old, college student and artist; in an acute state of panic and depression. She had attempted suicide by cutting her wrists following an experience which revived the conflicts of her infantile neurosis. She had succeeded in making an impression on her 38 year old professor with whom she later performed fellatio. This she did not consider as a "sexual matter." Her breakdown did not occur until after sexual intercourse took place. She was not upset by the physiology of intercourse, but felt that she had been obliged to subordinate her feelings, to give up her personality, to lose her own entity.

An analysis of over 3 years' duration disclosed that this mixed neurosis (mostly obsessional) in a schizoid personality was based on an homosexual attachment to a domineering mother. The world collapsed at the moment when the defense structure of a phantom penis was shattered by the experience of intercourse. As a consequence of her castration anxiety she showed a marked regression to the urethral and anal-sadistic levels. There were episodes of depersonalization as a sign of further retreat. She withdrew from work, studies and friends, led a routine life at the sheltering home of her family, playing cards, going to movies, talking and sleeping.

In the beginning of the fourth year of treatment we felt the necessity for a short cut. She received 10 electroshock treatments, with comparatively long lasting memory disturbances, but with improvement in her ability to test reality. Most important of all she was able to leave home and begin a program of work and study. This work was mechanical, technical routine work; in her artistic work she still showed signs of inner disturbance. She was, however, able to resume sexual intercourse with enjoyment, though without orgasm. Her psychotherapeutic interviews continued, and the originally bad prognosis came to look more favorable.

Case No. 4. Female, single, executive secretary on magazine. Her father died when she was 9 months old, her mother when she was 13. She lived with an aunt who had been disillusioned by her marriage experience. She had three older sisters, one of whom died of tuberculosis, another of whom was unstable. The third, the oldest, became a mother substitute.

Her health was good until in her thirties. She then developed tuberculosis, and was obliged to go west for six years. On her return she lived in the country for winter months, and then developed her first depression. This cleared up after about six months

time, quite suddenly. She was under treatment in a private sanitarium during the last two months of the illness. Three and a half years later (June 1935) she developed a second and more serious depression, in which she became suicidal, with fantasies of drowning herself. She was hospitalised, with recovery within a few months. She returned to work and held a position successfully for over 10 years, with increasing responsibility.

In the spring of 1942 symptoms of depression returned, and she finally was advised to give up work. The psychiatrist who had treated her after her second depression suggested sanitarium treatment. During this third depression the symptoms were identical with those of the previous attacks. She was troubled by obsessive images of the sexual organs, of sexual intercourse and of fellatio. She felt that she must get away, and frequently packed her trunks with the intention of leaving. She had fantasies of drowning herself, which terrified her. She was tense and agitated most of the time, with occasional calm moments.

As soon as she heard of other patients having electroshock treatments she begged to be given them. By this time the depression had abated considerably and some important work had been done on the basic psychodynamics of her illness. However, since the depression did not show signs of early disappearance and the need for getting back to work became imperative, it was decided to accede to her importunate request. Her reaction to the treatments is described elsewhere; her recovery was rapid and complete. She had no difficulty in finding a good job, and is well and happy.

Case No. 5, Female, married, age 37, no children. The father was Catholic, but irresponsible. He was still living at the time of this report and dependent on the patient. Her mother died in her sixties, Jewish, upright, the mainstay of her family. The patient was confused by these extremes in her parents. Her older brother, towards whom she felt strongly maternal, had recently married and had a baby.

The patient was somewhat wild in adolescence and early womanhood, but eventually married a conservative, affectionate, hard-working and successful husband. She was not emotionally interested in him, and after a few years fell in love with another man.

Persuaded by a friend to undergo psychoanalytic treatment, she was under analysis for 18 months. She was at first attached to and dependent upon the analyst, then suspicious, and finally resentful, blaming him for the results of her lack of co-operation. As a result of rejection by her lover she became acutely depressed and was sent to a sanitarium, on the advice of her analyst. Here she showed agitation, confusion, great lability of mood, constant indecision, a tendency to blame others for what had happened, and paroxysms of self-blame. These un-

favorable symptoms receded somewhat under a program which included gardening, tennis and swimming, and was centered on intensive psychotherapy directed towards a constructive re-evaluation of her problems. However, since her prevailing mood remained depressive, it was finally decided to administer electroshock. She was given a course of 10 treatments, with progressive improvement in the mood level after the first two treatments. Just prior to the initiation of this course she had begun taking singing lessons and had been greatly encouraged by praise from her distinguished teacher.

At the conclusion of the course of treatments she seemed more stable, less indecisive, always cheerful and more self-confident. She had a marked retrograde amnesia, including complete loss of memory for the psychological work done during the summer. She returned home at her husband's insistence the day after the last shock was administered and soon afterwards declared that she was going to take a vacation from all psychiatrists. It was quite evident, however, that beneath the veneer of self-confidence she was concealing her anxieties about life and her unresolved doubts under a hypomanic defence.

Case No. 6, Female, single, 23. Father died when the patient was a small child. He had epilepsy. The mother was a deteriorating schizophrenic in mental hospital. One older brother was a psychopathic personality and had been alcoholic. In 1940 she was living with her brother and was under great strain because of his excessive drinking. She developed an acute anxiety state with phobias. She had a fear of riding on subways, fear of driving car alone for any considerable distance. She had attacks of panic for no good reason. She spent 6 months in private psychotherapeutic organization where she staged a good clinical recovery, with apparent insight. She then went to visit in the South. There she heard that her brother had tried to send her mother to a state hospital to save expense. She took an overdose of sleeping pills and was brought North by her brother, who put her in mental hospital. She was soon discharged as not committable and sent to private sanitarium, where she spent two months before being advised that she needed a new and freer environment.

On arrival she announced that she was tired of talking about herself and just wanted to be left alone. She refused to do anything but amuse herself, and did almost no talking about her problems. She asked for electroshock, apparently as an act of bravado, but refused to continue with it after two shocks had been administered. She became aggressively hypercritical of her surroundings, had spells of panicky feelings, demanded large doses of sedatives and hypnotics. Finally she was transferred to another sanitarium where she repeated the same pattern. She succeeded in persuading the resident psychiatrist to arrange a consultation with an eminent

specialist, who again advised her to have electroshock treatment. After two shocks she positively refused to continue with the course, and continued to show recurrent acute anxiety attacks and short periods of apparently complete disassociation from her surroundings which aroused the suspicion that her difficulty might be in the nature of an epileptic equivalent. After a series of induced mild hypoglycaemic insulin shocks she became quieter, and agreed that she needed to undertake deep psychotherapy.

She had been full of anxiety and guilt over having to move mother to state hospital for financial reasons, and was ridden with obsessive indecision. Finally she agreed to it. She had fears that her brother would someday try to have her committed.

Case No. 7, Female, married, age 30, had 3 children, all between ages of 2 and 5. Her husband was a psychopathic personality with a history of alcoholism.

In January 1940 her 12 weeks old son had to have an emergency hernia operation. Severe nervous shock was followed, six days later, by an acute depression. This continued unabated for almost a year, and was aggravated by her husband's alcoholism and sexual demands. She started proceedings for divorce, and thereupon immediately developed a manic reaction, with gross extravagance and shifting attachments. Upon admission to the sanitarium she was still in a hypomanic condition which continued for some months. In the meantime divorce proceedings were allowed to lapse, and her husband showed evidence of his loyalty and affection by taking full charge of the children and abandoning alcohol. The possibility of resuming her place as wife and mother was thoroughly discussed, and an attempt was made to give her partial responsibility for the care of the youngest child. Faced with this challenge she again became seriously depressed, whereupon it was decided to give her a course of electroshock treatments.

After the series was concluded the depression seemed to lighten somewhat. She accepted the course in an attitude of passive submission, and had shown an equally passive immediate reaction to the treatments. Subsequently, however, she became more accessible to psychotherapy and reconciled to the possibility of re-creating her family life. A few months later her husband entered the army. Since then she progressed steadily, assumed full daytime care of her children, had no return of severe depression, and one year after the completion of electroshock treatment was ready to set up housekeeping and assume full charge of her children.

Case No. 8, Widow, age 67. Involutional melancholia. Symptoms of depression had appeared 3 or 4 years previously, and had become accentuated upon the death of her husband. She was sent to a private sanitarium, where she regressed to the point of urinary and fecal incontinence, with refusal to talk

to the physicians. Despite the presence of chronic cardio-vascular disease and hypertension it was decided to give her a series of shock treatments. There ensued a dramatic clinical recovery. Her son insisted that she was well enough to go back to house-keeping, whereupon she again showed signs of marked regression, and gradually developed the facies of a deep melancholia, muttering self-accusations and fears of being punished or harshly treated. It was decided to send her to a sanitarium for a second course of shock treatments. This plan was carried out. There was again a marked improvement, though after a time the effect of each treatment seemed to last for a shorter time than the one before. It was eventually decided that no lasting improvement could be effected and that electroshock would be only useful as a palliative. She was too far deteriorated to be accessible to psychotherapy.

During this last phase of her illness she again became partly incontinent, though with each accident she showed signs of embarrassment and apologised to the nurse. When emerging from unconsciousness after each shock treatment she always sat up straight with a startled look, clapping her hand over her mouth, as much as to say; "What have I done? Please don't be harsh with me."

Case No. 9, Male, single, age 33. He was always deeply neurotic, with ambivalent feelings towards both parents. He was idolized by his mother, who pampered and babied him. He was treated with alternating harshness and indulgence by his father. He had a brilliant mentality, witty, with literary gifts. He had had homosexual experiences in school and college, with extremely active guilt feelings. He had a long psychoanalytic treatment lasting 5 years, with marked clinical improvement, followed by his first heterosexual experience. Disturbed by possibilities arising from this dilemma he returned for further work with his analyst. Finding him away in the military service he sought the advice of another analyst who took him on trial. Within 2 or 3 months he developed an acute paranoid psychosis, for which he was temporarily hospitalised. He was subsequently sent to sanitarium where 10 electroshock treatments were given. The immediate response to treatment was violent resistance. He had to be persuaded to get on the table each time, and on one or two occasions gentle coercion was necessary. His psychosis cleared up after the first 4 or 5 shocks and he lapsed back to his former status, that of a very severe obsessive-compulsive neurosis.

Case No. 10, Female 27, married, one child. She was always overprotected and babied at home. She was attached to her husband, who was employed by her father, but looked on her father as the head of the family. She had always shown a tendency towards hypochondriacal fears and withdrawal from

social challenges. During the past few months she had become increasingly convinced that she had a brain tumor or something that had not been discovered. She succeeded in persuading a surgeon to take out an innocent appendix.

She came to the sanitarium only when her anxieties became too great for her family to handle. After a few weeks of unwilling residence there she developed an acute psychosis, with hallucinations, delusions, and paranoid fears. She was given 10 shock treatments, with prompt disappearance of the psychosis.

After that time (December 1942) she showed steady upward progress, accepted the idea that her trouble was due to "nerves," and took a much more direct and active interest in her responsibilities at home. She retained, or simulated, a complete amnesia for the events, personages, and thoughts that were connected with the development and course of her psychosis. Like Case No. 9, she also showed the combative reaction as she emerged from unconsciousness, and registered mild objections to each treatment while preparations were being made.

Case No. 11, Female, 43, married, two children. She came of nervous stock. She had a first "nervous breakdown" prior to marriage, and a second serious break (1931) following birth of her second child, a daughter. Her husband came from a large family of boys and was disappointed in having a daughter. A severe manic episode followed this depression. There was final recovery after several months in a private sanitarium. There was no trouble for 12 years. Her husband had been alcoholic, but had been on the wagon for some time. In the early summer he again began to drink. She became panicky lest he be disgraced and cashiered from the army. Mental confusion appeared. She proposed double suicide. Then followed delusional ideas, including belief that her husband was God and that she must die so that she could join him in heaven; also that she was supposed to have turned into a boy. Electroshock treatments were given, with complete disappearance of psychotic formations. There remained a severe degree of amnesia, some mild euphoria, and considerable mental confusion. The course was discontinued temporarily in order to observe whether improvement would continue and psychotherapy become possible, and because reaction to the ninth treatment showed a long period of shallow intermittent respiration, with long sleep and subsequent severe headache and malaise.

After two weeks in a convalescent centre she again developed acute manic symptoms and was returned to a mental hospital for further treatment.

Case No. 12. Male, single, age 20. The father a schizoid type and seclusive; the mother effusive, domineering, over-protective, and of limited intel-

ligence. Patient had infantile dependence on her and her two sisters.

Homosexual trends appeared and led to overt homosexuality in college, for which he was expelled. There was one futile attempt to have intercourse with a Lesbian girl.

After leaving college he took a series of inconsequential jobs not suited to his actual abilities. He began to drink to excess, continued his homosexual activities, and indulged in extravagances, sometimes signing checks on his mother's bank account.

One year after leaving college he began analysis. For six months he refrained from any sexual activities. He showed marked castration fears directed towards his mother, his aunts, his father and the analyst. He reacted to them by defiance of the analyst, and further drew money through his mother's bank account. The analyst was obliged to stop this practice, whereupon he broke off the analysis, attempted suicide, and was sent to a mental hospital. The analysis was subsequently resumed, but did not show progress. He was developing increasing paranoid reactions and intellectualization of analytic material.

After two years of analysis it was decided to apply electroshock. The treatment was interrupted for a short time after the fourth treatment because of symptoms suggesting vertebral fracture. X-rays were negative. A course of ten treatments was then completed. The convulsions were unusually violent and prolonged, despite the rather low voltage (115 Volts). During the post-convulsive period he showed typical and striking sucking movements of rhythmical type. He gave up the mouth gag with more than usual reluctance.

No evidence of change in attitude was noted until some time after the treatments were concluded. The analyst, who also administered the treatment, became for a time the focus of his paranoid hostility. This attitude, however, cleared up rather promptly, for he then admitted that contrary to his expectations he felt "changed," and became quieter and more rational. His critical feelings were transferred to his parents, whom he considered infantile, and he stated that he would look for a new job. This case is too recent to permit a valid prognosis.

SUMMARY

We have reported in this paper certain observations on the psychological mechanisms activated in patients subjected to electroshock therapy, both before, during, and after treatment. We have also offered some theoretical hypotheses in explanation of the selective influence of electroshock on the psycho-physiology of the patient.

Cases illustrative of the range of conditions treated, and of the reactions described, have been summarised.

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PSYCHOGALVANOMETRIC INVESTIGATIONS IN PSYCHOSES AND OTHER ABNORMAL MENTAL STATES *

PAUL HOCH, J. F. KUBIS AND F. L. ROUKE †

The purpose of this research is threefold: to investigate any differential characteristics of the psychogalvanic response (PGR) in psychotic patients and in normal individuals; to determine if the PGR characteristics correlate with changes in the mental condition of the patient, brought about spontaneously or by shock therapy; and, finally, to evaluate the possible role of the PGR technique in psychiatric examinations and in other related practical situations.

An examination of the extensive literature on the PGR reveals no apparent uniformity of opinion concerning the basic phenomena associated with the response, nor any uniform procedure with which to attack the problems involved. The many excellent summaries and reviews indicate clearly the lack of agreement among investigators whether they be physiologists, psychologists or psychiatrists, all of whom have been interested in these phenomena from different points of view. The physiologists are not altogether agreed upon the precise physiological factors involved in the PGR (13, 15), though the present trend is to consider the response as indicative of both sympathetic and parasympathetic activity (4). Thus, Hunt (11) has modified the earlier view of Landis and Hunt (16) in this direction. Somewhat more divergent opinions exist among psychologists as to the mental processes associated with the response (26). Emotion (24), conation (2), tension (16) and other processes have been sponsored as the fundamental psychological accompaniments or causes of the phenomenon. Landis (12), on the other hand, considered the PGR as of such great generality that it could not be relied upon as an indicator of any one mental process. This extreme position was later modified somewhat with tension set up as the best, though not unique, conscious correlate (16).

With such profound differences in theoretical outlook among physiologists and psychologists one would expect appreciable disagreement among psychiatrists. In his review of the literature on the PGR in psychiatry Landis (14) indicates that the conclusions of any research worker can be matched

* The clinical material of this investigation was obtained from Manhattan State Hospital.

† From the New York State Psychiatric Institute, the Graduate School of Fordham University, U. S. Navy Reserve.

by the contrary conclusions of some other investigator. This would offer very little hope indeed to the psychiatrist of ever utilizing the electrical changes of the skin for diagnostic purposes. Dunbar (6), however, after examining the table compiled by Landis, states that "one does not find quite as great a confusion as he implies. Thus, taking the table as correct, though, workers seem to vary hopelessly as to the psychogalvanic activity in dementia praecox, yet a decrease of body resistance has been reported but no increase. Moreover, in catatonia, all workers report increased resistance and decreased psychogalvanic activity and nearly all workers agree that there is a decreased activity in manic depressive states. In most of the other conditions, too few workers have reported to draw conclusions, so that the pessimistic view of Landis does not seem justified." The review of the psychiatric literature by Darrow (3) and his more recent researches (5, 20) confirms this conclusion.

Dunbar's position is more in accord with the universal hope among clinicians of finding some objective criteria for psychiatric diagnoses, which often have not been too specific or uniform from one community to another (10). Thus, Prideaux's (18) confidence in the PGR as "a valuable objective sign which may be able to help us in psychological medicine and which we cannot afford to disregard," has had its counterpart in the numerous galvanic investigations of abnormal mental states and other medical conditions as, for example, thyroid disturbances and even tuberculosis.

But despite this confidence and the analysis of Dunbar and Darrow, one nevertheless continues to be confronted with apparent fundamental inconsistencies among the results of different investigators working on similar or even the same problem. Thus, Landis (13) writes:

"Syz found increased psychogalvanic activity in dementia praecox. Westburgh (2), Odegaard, and Kinder (2) found decreased activity. . . . With respect to catatonia, Syz, Westburgh (2), Odegaard, and Syz and Kinder (2) reported decreased galvanic activity, while Richter (1), Syz, Syz and Kinder (1, 2), Westburgh (2), and Westburgh and Eyman reported increased electrical resistance in the body. . . . For manic-depressive insanity Syz, Westburgh (2), and Syz and Kinder (2) reported decreased galvanic activity, while Odegaard reported an increased variability in this activity. With respect to the elec-

trical resistance of the body in this syndrome Syz. and Syz and Kinder (1, 2) reported an increase, while Richter reported that the resistance was the same as normal."

Conceding the fact of the insecurity of differential diagnosis in psychiatry, it is difficult to appreciate how completely contradictory results are obtained by different investigators working on the same problem. Differences in methodology, measurement, recording (9), in general experimental technique, as well as in the stimuli applied, may help to explain the various opposing and contradictory views. But these are disturbing facts despite attempted explanations, and as such should engender a spirit of caution among investigators as well as impelling further research towards the clarification of the difficulties. Perhaps Goebel's (7) advice of some years back is timely here. Although he believed that the PGR might be of real diagnostic value in the study of psychiatric and medical problems, he warned against its exclusive use without other controls.

METHODOLOGY

The instrument used is a two stage direct current amplifying system in series with an Esterline-Angus ink recording milliammeter. The electrical circuit was developed at Fordham University by the late Dr. W. G. Summers and used extensively in experimental work and in investigations of deception in criminal suspects. More than 6000 experimental records were obtained and more than 200 criminal cases examined for deception. In both experimental and criminological work the instrument and technique yielded an accuracy of 98% (22).

The electrodes were of very thin and pliable silver, fitting the palm of each hand. An electrode jelly was used composed of gelatin in Ringer's solution (Frog's). To prevent evaporation and to insure continuous contact a wad of absorbent cotton was placed over the electrode and the entire palm wrapped securely with gauze.

An individual list of questions was prepared for each subject who was instructed to answer each question, at most, in one phrase or by a "yes" or "no." While in the psychogalvanic circuit the subject was questioned by the examiner, the same one for all patients. The questionnaire consisted of questions of two types, significant and non-significant. Significant questions pertained directly to the delusional or other strongly motivating emotional experience of the patient, as for example, "Did you try to commit suicide?" A non-significant ques-

tion would be "Did you ever live in South Carolina?" Three different significant questions, each used three times within the same questionnaire, were interspersed among the non-significant questions. This is similar to the procedure of questioning criminal suspects for purposes of detecting deception.

The following is a copy of the questionnaire used on one of the subjects of this investigation.

1. What is your name?
2. How old are you?
3. How do you feel?
- (A) 4. Are people plotting against you?
5. Did you eat lunch today?
6. How long have you been at this hospital?
- (B) 7. Did people accuse you of prostitution?
8. Do you remember being in Bellevue Hospital?
9. Is your father living?
- (C) 10. Do you hear voices talking to you when nobody is around?
11. Where do you live?
12. Is today Monday?
- (B) 13. Did people accuse you of prostitution?
14. How old are you?
15. What is your name?
- (C) 16. Do you hear voices talking to you when nobody is around?
17. What is your address?
- (A) 18. Are people plotting against you?
19. Have you any sisters?
20. What is your name?
- (C) 21. Do you hear voices talking to you when nobody is around?
22. What day is today?
23. What is your address?
- (B) 24. Did people accuse you of prostitution?
25. Is your father living?
- (A) 26. Are people plotting against you?
27. What day is today?

The subjects were 100 psychotic patients from Manhattan State Hospital. The sample included cases of schizophrenia, manic depressive reactions and the several types of organic psychoses. The records of 100 normal persons, of equivalent age and sex distribution were available for contrast.

ILLUSTRATIVE CASES

Figure 1 is a typical record of a normal individual who reacts with a psychogalvanic deflection to practically every question asked. The points at which questions are asked are indicated by small vertical marks at the top of each record. All charts read from right to left, and consequently, the galvanic reaction below the vertical mark at the extreme right is the subject's reaction to the first question.



Figure 1
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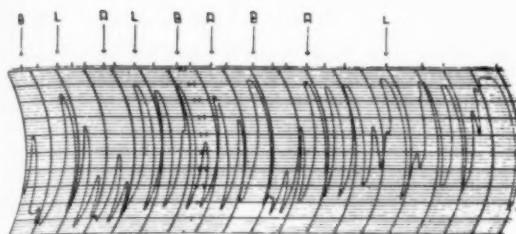


FIG. 1.

Figure 2 is the record of a distracted person. In states of exhaustion or distraction the galvanic responses of normal individuals are similar to those noted in psychotic patients. In contrast to figure 1 this record shows not only a diminished PGR but no galvanic reaction at all to most of the questions asked. The subject's resistance rises continually throughout the record. This is indicated by a gradual drop of the psychogalvanic curve (from right to left) despite the fact that many stimuli have been given. Note that six of the last seven questions elicit no PGR at all.

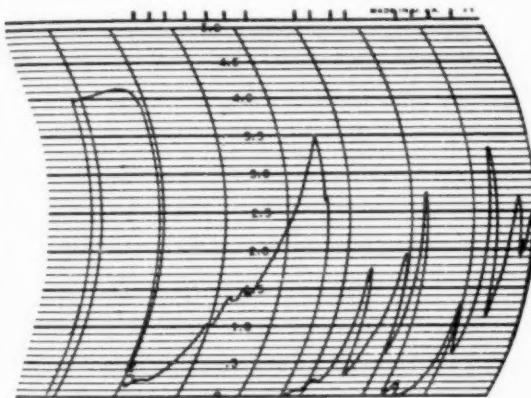


FIG. 2.

Figure 3 shows the characteristics of a lie reaction in a normal individual. The consistently large deflections at K, G, and P contrasted with the small deflections immediately preceding and following them, are indicative of deception.

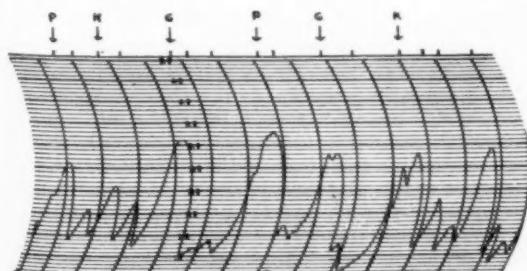


FIG. 3.

Figure 4 is a record of a schizophrenic patient in a catatonic state. This is similar to that of a distracted or exhausted normal person (fig. 2). There was little or no psychogalvanic reaction to most of the questions asked. At three points it became necessary to rebalance the subject's circuit, indicated by the letter "D." During the interview the patient was uncommunicative but crying, laughing, talking to himself and grimacing throughout. Later he admitted that during the entire procedure he was hearing voices and paid no attention to the test.

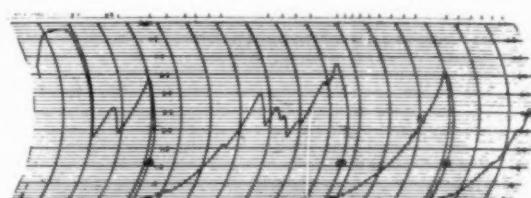


FIG. 4.

Figure 5 is the record of a fairly deteriorated general paretic who was attentive during the interview and responded verbally to every question. Despite this, no PGR of reliable magnitude was elicited by the questions.

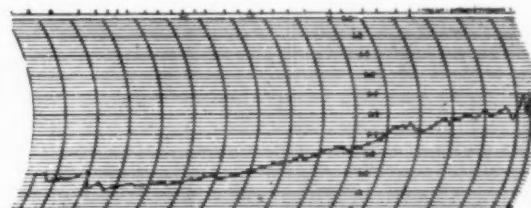


FIG. 5.

Figure 6. This patient was suffering from a manic depressive psychosis, depressed type, and was quite dejected and unhappy during the interview. She answered the questions slowly but cooperated well. This patient, too, showed a lack of reaction and a continually increasing resistance necessitated frequent rebalancing.

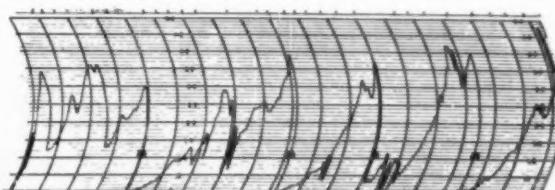


FIG. 6.

Figures 7 and 8 illustrate how the PGR approaches the normal with corresponding clinical improvement.

In figure 7 the patient was in a catatonic state, mute and devoid of psychomotor activity during the interview. The record shows practically no deflections to the questions. (D indicates rebalancing). This patient was then treated with metrazol, and a few weeks later a totally different record (fig. 8) was obtained, closely approximating those of persons with increased sympathetic activity. However, certain irregularities are present. There are still periods where reactions are lacking and where continually increasing electrical resistance makes rebalancing of the circuit necessary. Clinically, this patient made a very good impression and was considered recovered. A few days after the test was made she again relapsed into the psychosis, showing the characteristic decreased psychogalvanic activity.

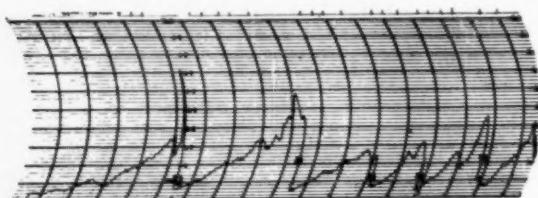


FIG. 7.

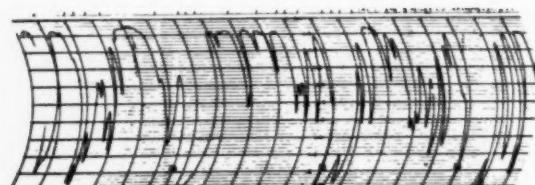


FIG. 8.

Figure 9 is the record of a paranoid patient shortly before he was released from the hospital. The early records of this patient are similar to the psychotic records shown above. This patient had tried to commit suicide but denied steadfastly that he had made the attempt. The question "Did you try to commit suicide?" was asked at the points marked by the arrows. The large deflections indicate that the patient is trying to cover up the suicidal attempt. A retest showed the same characteristics.

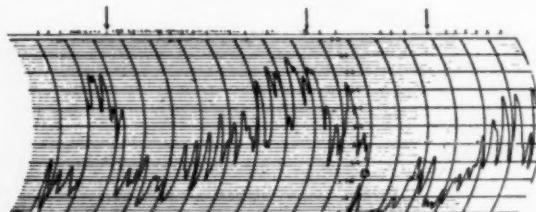


FIG. 9.

This record illustrates how deception or evasion may be detected in psychotic patients. It is obvious,

however, that no deception diagnosis can be given when the records show a diminished PGR or no PGR to the questions asked. With the exception of a few well preserved paranoid patients, the records of psychotics are not interpretable for deception. However, as the patient improves (fig. 9) and his PGR shows a corresponding approach to the normal, the characteristics of the deceptive response become more apparent.

Figure 10 shows the record of a criminal suspect who did not have a manifest psychosis but gave a clinical impression of a schizoid psychopath.

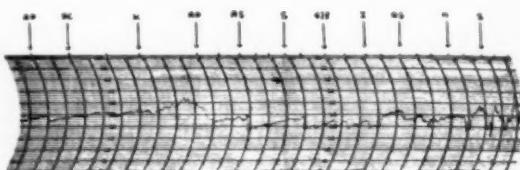


FIG. 10.

DISCUSSION OF RESULTS

I. The first phase of this investigation concerned itself with the answer to the question: Do psychotic individuals differ from normal people in their psychogalvanic reactions?

Two characteristics of the records of psychotic patients were indicated as a possible value in differentiating them from the records of normal subjects:

(a) A continually increasing electrical resistance during the interview period necessitating frequent rebalancing of the subject's circuit. This occurred even after the 4-6 minutes used as a preliminary period of adjustment and habituation. Such a period of time was sufficient for the normal group to reach the relatively stable basic resistance level of the subject.

(b) No reliable galvanic reactions to many, if not most, of the questions asked. A galvanic reaction was considered reliable if the deflection were greater than 3% of the maximum chart deflection possible under test conditions. This was considered sufficient for any deviation that might occur in a pronounced fluctuation in line voltage or in a pressure change of the subject's hands.

However, an objective criterion of abnormality was deemed necessary for purposes of precise differentiation. With this in mind, a record was considered "abnormal" if no reliable PGR was elicited by 50% or more of the questions asked.

Upon analysis of the records of the 100 patients it was found that 80% were atypical, i.e., characterized by the above mentioned PGR deviations from the criterion. On the other hand, only 5%

of the contrast group (normal cases) showed records comparable to those of the psychotic group. This difference between the reactions of the normal and psychotic groups is significant enough to warrant further investigation in this field. If these results are verified by independent investigators the instrument and technique could be used, with certain limitations, as a contributory aid in the diagnosis of doubtful psychotic cases. This technique cannot be called an absolute one, but it does show promise of effective use as an auxiliary to clinical examinations.

Though our study of the neurotics is not completed, the trend of the data (a sample of 28 cases) points to a similarity of the PGR in neurotics and normals. In three of the neurotic individuals, atypical records were obtained similar to those of the psychotics. More specifically this was found in certain anxiety states where the persons examined were fatigued and the continued emotional tension produced a decreased PGR. In view of the fact that decreased deflections characterize the psychotic reaction and appear in only about 5% of the normal group (and probably not much more in the neurotic group), it is believed that the PGR can give significant aid to one dealing with a clinically dubious mental condition. It would seem to be especially valuable in differentiating psychoneuroses from early cases of schizophrenia or manic depressive psychoses, or even organic conditions.

On the basis of the criterion used no absolute differentiation among the various psychoses was found possible. Though this is so, the percent of abnormal records is greater in some psychoses than in others, the greatest being in the catatonic type of schizophrenia. The PGR is seemingly a collective indicator in most of the psychotic disorders (17). Because emotional states are profoundly disturbed and sympathetic activity correspondingly altered in nearly all of the known psychoses, it is not surprising that one can record such pronounced changes through the PGR. The theoretical explanation of this is reserved for a further publication concerned with the theoretical aspect of the problem.

Pertinent to this phase of the research we may mention the recent investigation of Solomon, Darlow and Blaurock (20) which used a similar questioning procedure. The PGR deflections obtained were divided into five categories: zero, small, medium, large and extreme. Considering only the reactions to crucial ideational stimuli we note that 58% of the PGR deflections were in the zero or

small categories before pharmacologic treatment. This would seem to imply that the majority of even the emotionally laden questions evoke PGR deflections of below average classification. If the non-critical questions were included in the tables it is probable that the percentage mentioned would be much greater, a result consistent with that obtained in this investigation.

The results of the Solomon and Fentress (21) research seem to indicate the similarity of the reactions of neurotics (compulsion neurosis) and those of psychotics. Our tentative results on a small sample do not seem to point to the same conclusion.

II. This investigation confirms the previously expressed opinion of certain investigators that there is a definite relation between the PGR and the psychotic condition of the individual. As the psychotic patient improves, the PGR correspondingly approximates the normal PGR (8). This is however, no immediate correlation between the PGR and the clinical signs of improvement. Our results point to the fact that the PGR tends to remain abnormal for a certain period of time after the clinical condition of the patient is judged considerably improved. The relationship is similar to that noted in general paresis where the serology lags behind the clinical improvement.

Forty schizophrenic patients were tested before and after they had received insulin and metrazol treatment. In general, with the clinical improvement of the patient the abnormal characteristics of the PGR diminished or disappeared. Five instances occurred however, where the PGR continued to be abnormal, with no signs of improvement, while the clinical condition of the patient seemed much improved. In these instances the majority of the patients (i.e. four) suffered a relapse. Contingent upon further research on a larger number of cases, these results point to an objective method of testing the reliability of improvement in psychotic patients who receive this type of treatment. At any rate, this technique may help one determine whether this treatment changes the whole psychosis, leaving certain underlying mechanisms untouched.

The experimental result obtained in this section is in conformity with the findings of Solomon, Darlow, Blaurock (20) on the eighteen cases reported in their tables. Specifically, they find that the magnitude of the galvanic response increases appreciably in those cases which improved after treatment (twelve cases), remains small in those which did not improve (two cases), and remains the same in

the four cases having an appreciable galvanic response before treatment. The general tendency is for an "improved" PGR with clinical improvement and a small PGR in cases showing no improvement.

III. One of the purposes of this investigation was to determine the value of the psychogalvanic technique as used in criminological work, in detecting deception among psychotics concerning their delusions and hallucinations. It was already indicated that the technique cannot be used validly for the detection of deception in cases showing a marked "abnormal" type of galvanic reaction. Only in patients who are very well preserved or do not show abnormality in their PGR, or in those who show a marked clinical and PGR improvement, can this technique be employed reliably.

Twenty patients, who were sufficiently improved to be tested for deception and who were later discharged from the hospital as recovered, gave records which could be reliably interpreted. In 85% of the instances where the patient tried to deny or cover up the presence of delusions or hallucinations, characteristic deception or lie reactions were obtained. This was confirmed by previous and subsequent clinical interviews.

It is at times impossible, especially in certain paranoid cases, to ascertain if delusions or hallucinations are present. If the patient admits delusions and hallucinations, no lie response is obtained. However, if he tries to evade the question or deny the presence of delusions or hallucinations, it is possible to demonstrate a lie reaction when the conditions enumerated above are fulfilled.

The early literature in the field manifests the interest of investigators in the possible use of the PGR in detecting either simulation of mental or physical disorder or deception concerning symptoms. Albrecht (1), Wiersma (25), Zimmern and Logre (27), Gregor and Gorn (8) and Prideaux (18) find the galvanic response a useful tool in these matters, while Veraguth and Brunschweiler (23) are skeptical of its value in diagnosing deception or simulation.

IV. Since this instrument is used in criminological work, extreme care should be exercised in interpreting the records obtained from criminal suspects. If certain abnormalities in the curves are recorded, a thorough psychiatric examination of the patient is suggested. Furthermore, every criminal investigator using this type of test (or one similar to it) should be acquainted with any deviating types of test reactions because the number of mentally abnormal individuals, psychotic and psychopathic, is high among criminals. Our examina-

tion of psychopaths is not completed (16 cases), but preliminary testing indicates that an appreciable proportion (4 cases) show PGR abnormalities.

Though the results of this investigation are suggestive and encouraging, the PGR cannot give an absolute diagnostic statement. It can corroborate expert opinion on certain aspects of a psychiatric problem, and should be used only as an auxiliary in medical work. But as an auxiliary it is a helpful index if one knows its limitations.

SUMMARY

1. One hundred psychotic patients were examined by means of an ink recording psychogalvanometer. The psychogalvanometric reactions (PGR) are significantly different from those of a normal contrast group.
2. Improvement in mental condition, whether spontaneous or due to treatment, is correspondingly reflected in a more normal PGR.
3. Under certain conditions this technique reliably indicates whether the patient is covering up hallucinations or delusions.
4. The results of the investigation point to the value of this technique as an auxiliary in clinical diagnosis.
5. The findings should caution the criminologist in the use of the psychogalvanometer on criminal suspects who may be psychotic or borderline cases.

LITERATURE

1. ALBRECHT, W.: Die Trennung der nicht organischen von der organischen Hörstörung mit Hilfe des psychogalvanischen Reflexes. *Archiv für Ohren-Nasen-und Kehlkopfheilkunde*, **101**: 1, 1917.
2. AVELING, F.: The psychogalvanic phenomenon. *Proc. IX. Int. Cong. Psychol.*, **9**: 63, 1920.
3. DARROW, C. W.: Considerations for evaluating the galvanic skin reflex. *Amer. J. Psychiat.*, **13**: 205, 1933.
4. DARROW, C. W.: Neural mechanisms controlling palmar galvanic skin reflex and palmar sweating; consideration of available literature. *Arch. Neurol. & Psychiat.*, **37**: 641, 1937.
5. DARROW, C. W., and SOLOMON, A. P.: Galvanic skin reflex and blood pressure reactions in psychotic states; reactions to sensory, indifferent, ideational and crucial ideational stimuli. *Arch. Neurol. & Psychiat.*, **32**: 273, 1934.
6. DUNBAR, H. F.: *Emotions and Bodily Changes*. New York, Columbia University Press, 1935.
7. GOEBEL, O.: Zur Wertung des Psychogalvanischen Reflexes. *Arch. f. Ohrenhk.*, **102**: 183, 1918.
8. GREGOR, A., and GORN, W.: Zur psychopathologischen und klinischen Bedeutung des psycho-

- galvanischen Phänomens. *Zeit. f. d. ges. Neurol. u. Psychiat.*, **16**:1, 1913.
9. GREENWALD, D. U.: Circuits now available for the measurement of electrodermal responses. *Psychol. Bull.*, **32**: 779, 1935.
 10. HOCH, P., and RACHLIN, H. L.: An evaluation of manic-depressive psychosis in the light of follow-up studies. *Amer. J. Psychiat.*, **97**: 831, 1941.
 11. HUNT, W. A.: Recent developments in the field of emotion. *Psychol. Bull.*, **38**: 249, 1941.
 12. LANDIS, C.: Psychology and the psychogalvanic reflex. *Psychol. Rev.*, **37**: 381, 1930.
 13. LANDIS, C.: Electrical phenomena of the skin. *Psychol. Bull.*, **29**: 603, 1932.
 14. LANDIS, C.: Psychiatry and the psychogalvanic reflex. *Psychiat. Quart.*, **6**: 262, 1932.
 15. LANDIS, C., and DEWICK, H. N.: The electrical phenomena of the skin (Psychogalvanic Reflex). *Psychol. Bull.*, **26**: 64, 1929.
 16. LANDIS, C., and HUNT, W. A.: The conscious correlates of the galvanic skin response. *J. Exp. Psychol.*, **18**: 505, 1935.
 17. ÖDEGAARD, Ö.: The psychogalvanic reactivity in normals and in various psychopathic conditions. *Acta Psychiat. et neur.*, **5**: 55, 1930. (*Psychol. Abst.*, **4**: 437, 1930).
 18. PRIDEAUX, E.: The psychogalvanic reflex: A review. *Brain*, **43**: 50, 1920.
 19. PRIDEAUX, E.: Expression of emotion in cases of mental disorder as shown by the psychogalvanic reflex. *Brit. J. Psychol. (Med. Sect.)*, **2**: 23, 1921.
 20. SOLOMON, A. P., DARROW, C. W., and BLAUROCK, M.: Blood pressure and palmar sweat (galvanic) responses of psychotic patients before and after insulin and metrazol therapy. *Psychosom. Med.*, **1**: 118, 1939.
 21. SOLOMON, A. P., and FENTRESS, T. L.: Galvanic skin reflex and blood pressure reactions in psychoneuroses. *J. Nerv. and Ment. Dis.*, **80**: 163, 1934.
 22. SUMMERS, W. G.: Science can get the confession. *Fordham Law Review*, **8**: 334, 1939.
 23. VERAGUTH, O., et BRUNSCHEWILER, H.: Recherches sur le phénomène psychogalvanique dans quelques cas de troubles sensitifs par blessures cérébrales de guerre. *Revue Neurologique*, **34**: 151, 1918.
 24. WECHSLER, D.: The measurement of emotional reactions: Researches on the psychogalvanic reflex. *Arch. of Psychol.*, **12**: No. 76, 1925.
 25. WIERSMA, E. D.: Over de waarde van het gelijktijdig registreren van het plethysmogram en de psychogalv. reactie. *Verslag u. d. Kon. Acad. Wet. Amster.*, **20**: 1009, 1916. (Landis and deWick, 1929.)
 26. WOODWORTH, R. S.: *Experimental Psychology*. New York, Henry Holt, 1938.
 27. ZIMMERN, A., et LOGRE, B.: Le réflexe galvanopsychique. *Jour. de Radiol. et d'Electrol.*, **2**: 610, 1916.

STUDIES ON PALMAR SWEATING *

III. PALMAR SWEATING IN AN ARMY GENERAL HOSPITAL

CAPT. JACOB J. SILVERMAN † AND LIEUT. COL. VERNON E. POWELL,‡ M.C., A.U.S.

The significance of sweating of the palms has been reported in detail elsewhere (18). It was shown that palmar sweating is unique and differs anatomically and physiologically from general body sweating.

Anatomically, there are more glands per square area on the palm than anywhere else on the general body surface (10). The sweat glands on the palm are arranged on ridges and these ridges assume characteristic patterns. This arrangement assures maximum grasping and tactile facility (8). Functionally, the amount of perspiration on the

palm is from five to ten times as great as that of the general body surface (11). Palmar sweating takes place continuously whereas it is intermittent on the general body surface (10). Another striking difference is the response to outside temperatures. Under ordinary conditions sweating of the palms is not influenced significantly by outside temperatures (11). Increasing the outside temperature will augment general body sweating but not palmar sweating. Experimentally, it can be demonstrated that palmar sweating can be evoked by mental stimuli (11). Problems in simple arithmetic will cause a distinct and measurable increase in sweat of the palms. Finally, the palm is one of the few places where emotional sweating takes place, and is peculiarly an indicator of emotional disturbances. In a relaxed state, such as in sleep, the palms

* Brigadier General Royal Reynolds, Kennedy General Hospital, encouraged the writing of this paper. Lieut. Morris Kaslow gave technical assistance.

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are characteristically dry. In anxiety states excessive palmar sweating is strikingly seen (19).

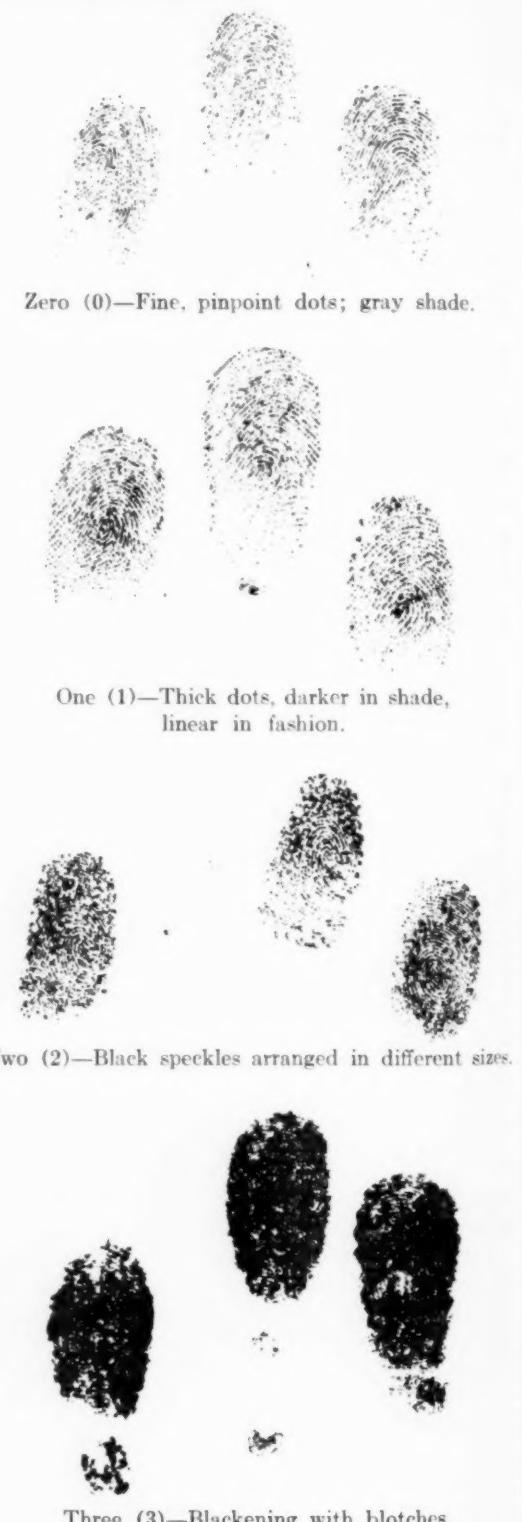
In the past complicated techniques have been used to study palmar sweating. These techniques required elaborate apparatus and were subject to technical errors. Moreover, they were not generally available to physicians. To overcome these objections a colorimetric technique to study palmar sweating has recently been devised (17).

A brief description of the technique will suffice for present purposes. The principle depends upon the inter-action of a chemically treated paper with sweat containing a reacting salt. Tincture of ferric chloride is applied to the palm. After drying, contact is made for a specified time on paper previously impregnated with tannic acid. Sweat is approximately 99% water and will carry with it in solution the readily soluble ferric chloride. The tannic acid reacts with the iron to form a stain. The arrangement of the active sweat glands is portrayed upon the paper, and depending upon the degree of sweating the response has been graded into four groups: zero (0) or faint response; one (1) or moderate response; two (2) or strong response; and three (3) or intense response. (See figure I.) To simplify the technique only the distal volar aspect of the second, third and fourth fingers is studied. It has been found experimentally that those parts accurately reflect palmar sweating. (See figure II.)

This technique was applied to 1160 patients in an Army General Hospital. The patients studied came from the ordinary medical, surgical and neuropsychiatric wards. Palmar sweat studies were also made on 100 patients discharged from the Army on grounds of disability. For comparative purposes palmar sweat studies were carried out on 71 members of the hospital staff, which included enlisted ward attendants, nurses and duty medical officers. The tests were carried out by a trained enlisted man in a quiet room free from distracting influences. To check the results the tests were frequently repeated on the same patients.

FINDINGS

Chart I illustrates the type of palmar sweating response found in 1160 patients. A zero (0) or faint response was given by 63 or 5.4%; a one (1) or moderate response by 134 or 11.6%; a two (2) or strong response by 696 or 60%; and three (3) or intense response by 267 or 23%. It is thus seen that 83% of the patients gave either a strong or intense palmar sweat response. For comparative purposes the sweat response in the hospital



Zero (0)—Fine, pinpoint dots; gray shade.

One (1)—Thick dots, darker in shade, linear in fashion.

Two (2)—Black speckles arranged in different sizes.



Three (3)—Blackening with blotches.

FIG. I. Classification.



FIG. II. An example of excessive palmar sweat response seen in a patient suffering from neuro-circulatory asthenia.

staff group showed 47% giving a faint response; 31% a moderate response; 28% a strong response; and only 4% an intense response. A combined faint and moderate response thus accounted for 78% of the hospital staff group. Compared with the patients, the staff group is characterized by a high incidence of zero (0) or faint response and a low incidence of three (3) or intense response.

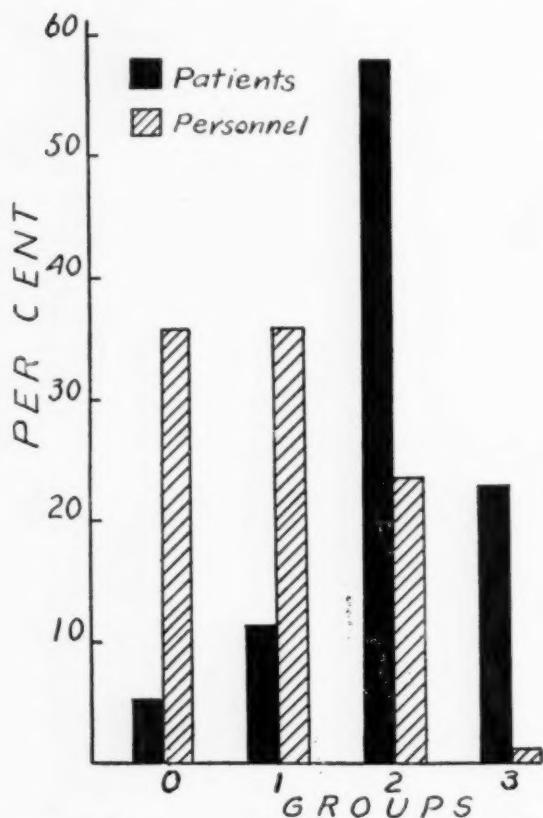


CHART I. Comparative palmar sweat response in patients and personnel in an army general hospital.

Chart II shows the type of palmar sweat response seen in 100 patients discharged from the Army because of disability. A high percentage of these patients were discharged on a neuro-psychiatric diagnosis. Psychotic patients were not included in this group. A faint response was given by 4% of the group; a moderate response by 29%; a strong response by 29%; and an intense response by 38%. The four patients who gave a faint response were found to have definite organic disorders. Commonly, where there was a diagnosis of psychoneurosis, anxiety type, an intense palmar sweat response was obtained.

Chart III illustrates the type of sweat response seen in 100 patients from the neuro-psychiatric

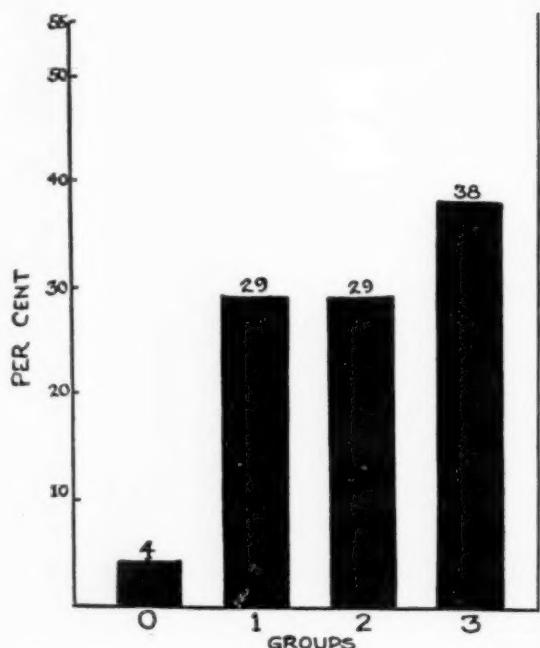


CHART II. Sweat response seen in 100 patients discharged from the army for disability.

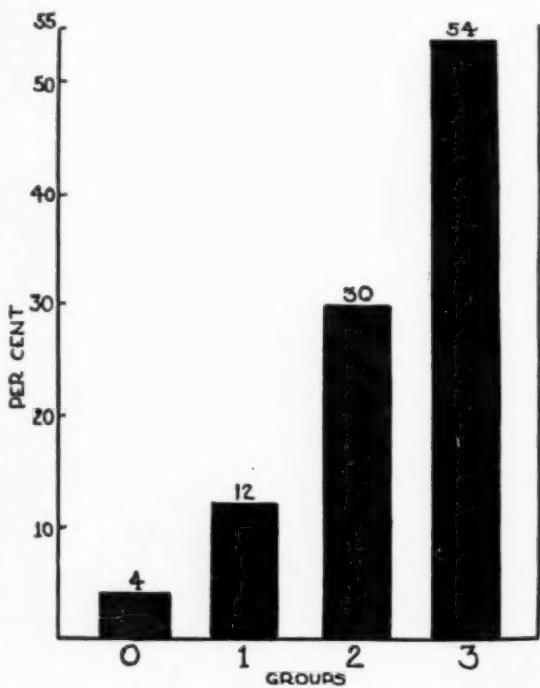


CHART III. Sweat response seen in 100 patients admitted to the neuropsychiatric wards.

wards. The majority of these patients were originally admitted to the hospital with a diagnosis of psychoneurosis. A faint response was given by 4%; a moderate response by 12%; a strong response by 30%; and an intense response by 54%. The high incidence of excessive palmar sweaters is striking. One out of every two patients demonstrated an intense palmar sweat response, and more than four out of five gave either a strong or intense response.

The composite figures of all groups are shown in Table I. It is noted that a zero (0) response is most common in the hospital personnel and a three (3) response is predominant in neuro-psychiatric patients. Patients discharged from the Army on grounds of disability also demonstrate a high percentage of three (3) response. The low incidence of excessive palmar sweating in the hospital personnel is striking.

be the basis for the chief neurosis met in the present day Army (16). But what is anxiety? Anxiety is an emotional response to danger. It is similar to fear but in addition there is a state of excessive autonomic activity characterized by all sorts of subjective and physical manifestations, which may leave the body helpless and crippled even after all danger has passed (16).

Zanuck, an astute movie producer, made the following observation during the Tunisian campaign (23):

"Momentary fright is a peculiar thing. It vanishes for most men the very second the shell bursts or the bomb explodes and you are pleased to know that it didn't have your telephone number on it. In odd moments I discussed the subject of battle conduct with several seasoned campaigners. They all freely admit their momentary fright and call any man a

TABLE I

Analysis of 1160 Patients Compared with a Group of 71 Hospital Personnel, 100 Patients Coming for Discharge, and 100 Patients from the N-P Wards

| Groups | 0 | | 1 | | 2 | | 3 | |
|----------------------------------|-----|-----|-----|------|-----|----|-----|----|
| | No. | % | No. | % | No. | % | No. | % |
| 1160 patients | 63 | 5.4 | 134 | 11.6 | 696 | 60 | 267 | 23 |
| Hospital (71) personnel..... | 29 | 47 | 24 | 31 | 15 | 28 | 3 | 4 |
| C.D.D. patients (100 cases).... | 4 | 4 | 29 | 29 | 29 | 29 | 38 | 38 |
| N-P patients (100 ward cases)... | 4 | 4 | 12 | 12 | 30 | 30 | 54 | 54 |

DISCUSSION

Normally, a certain degree of palmar sweating is seen in states of anticipation. For example, a student before an examination or an expectant father before the delivery of his child will show sweating not only of his palms but also of the soles and axillae. The very nature of this study may have normally evoked a certain degree of sweating. It should be emphasized, however, that the test situation was more or less similar for all patients. The average patient looked upon the test as a simple finger print record. It is probably true that the test situation was more conducive to the development of a mild anxiety response in patients as compared with the members of the staff. Further studies, including those on seasoned troops (20), lead us to believe that the situational reaction to the test per se is in the vast majority of cases insignificant.

In an Army hospital where functional diseases are common it is not surprising to find many expressions of a disturbed vegetative nervous system. In most functional disturbances the anxiety state is the common denominator, and appears to

liar who claims he isn't afraid when the going gets really hot. But this fright is only a passing flash that disappears before the smoke has begun to clear. The soldier to worry about and send home to a base is the one who worries before things happen and continues to sweat and look pale and drawn after they have happened."

The physiological reactions produced by emotional changes have been subject to a great deal of investigation, such as studies on glucose metabolism (5), skin temperature (14), gastroduodenal function (15), gastric activity (21), leucocytosis (13) and galvanic skin reflex (3). Ordinarily, the changes which stand out during anxiety are similar to those produced by adrenalaemia: tachycardia, dilated pupils and pallor. Cannon (2) has shown that during emotional crisis the sympathetic system tends to discharge en masse. It does not mean, however, that parasympathetic reactions, of which sweating is an example, are inhibited or inactive. Gellhorn (7) has recently indicated that emotional excitement evokes a stimulation of both branches of the autonomic nervous system. Palmar sweating attains special significance when it is looked

upon as an autonomic response related particularly to emotional activities (17).

The palmar sweat response may be considered one of the important indices of the emotions. It is increased in emotionally disturbed patients, particularly of the anxiety type. Approximately one out of every two patients admitted to this hospital with a diagnosis of psychoneurosis showed a three (3) or intense type of palmar sweat response. In these patients dry palms, as shown by a zero (0) response, are uncommon. Like the leucocyte count or the sedimentation test the palmar sweat response should be looked upon as an aid in diagnosis. The history of patients is often misleading. To admit fear is considered a breach of military and masculine discipline. However, in fear and anxiety the autonomic system speaks up: when a man is frightened his palms sweat. Dry palms in an anxious patient is an anomaly.

The clinical observation of palmar sweating has long been known. DaCosta (4) in 1871, in his classical paper on the "irritable heart" stated: "But there was also evidence of disorder of the sympathetic nervous system as shown in the itching of the skin and excessive perspiration from which many suffered. Inordinate sweating of the hand was several times complained of (as in case 159)". It is interesting to note that DaCosta advised the use of atropine which has later been shown to be a powerful antiparasym pathetic drug. In an analysis of 200 patients with the same syndrome, Wood (22) in 1941 found visible sweat on the palms in 67% of the patients. It is now generally agreed (6) that in the DaCosta syndrome there are emotional disturbances as well as disturbances of the vegetative nervous system. Sweating of one of the palms is one of the objective signs in this psychosomatic disturbance. McCullagh (12) in an analysis of a series of patients suffering from neurocirculatory asthenia found hyperhidrosis in the extremities in 91% of the patients. More recently, Billings, et al. (1) list excessive sweating as one of the signs to be looked for in maladjustment and personality disorder in the prospective soldier.

SUMMARY

A palmar sweat study was performed on 1160 patients in an Army General Hospital. For comparative purposes sweat studies were also made on patients admitted to the neuro-psychiatric wards, patients discharged from the Army on certificates of disability, and members of the hospital staff. The sweat response was graded and it was found that 83% of the 1160 patients gave either a strong or intense palmar sweat response. An excessive

type of sweat reaction was found in high incidence in those patients discharged from the Army and most frequently in those patients with a diagnosis of psychoneurosis.

The palmar sweat response has important clinical significance, especially when it is looked upon as a cholinergic phenomenon related particularly to emotional activities.

BIBLIOGRAPHY

1. BILLINGS, E. G., EBAUGH, F. G., MORGAN, D. W., O'KELLY, L. I., and SHORT, G. B., and GOLDING, F. C.: Comparison of one hundred Army psychiatric patients and one hundred enlisted men. *War Med.*, **4**: 283, 1943.
2. CANNON, W. B.: *Bodily Changes in Pain, Hunger, Fear and Rage*. 2nd Ed. Appleton, New York, 1929.
3. DARROW, C. W.: Neural mechanism controlling the palmar galvanic skin reflex and palmar sweating: A consideration of available literature. *Arch. Neurol. and Psychiat.*, **37**: 841, 1937.
4. DACOSTA, J. M.: On irritable heart; a clinical study of a functional cardiac disorder and its consequences. *Am. J. Med. Sc.*, **61**: 71, 1871.
5. DIETHELM, O.: Influence of emotions on dextrose tolerance. *Arch. Neurol. and Psychiat.*, **36**: 342, 1936.
6. DUNN, W. H.: Emotional factors in neurocirculatory asthenia. *Psychosom. Med.*, **4**: 333, 1942.
7. GELLIHORN, E.: *Autonomic Regulations*. Interscience, New York, 1943.
8. JONES, F. W.: *The Principles of Anatomy as Seen in the Hand*. Williams & Wilkins, Baltimore, 1942.
9. JURGENSEN, E.: Mikrobeobachtungen der Schweißsekretion der Haut des Menschen unter Kontrastfarbung. *Dtsch. Arch. klin. Med.*, **144**: 193, 1924.
10. KRAUSE: Wagner's Handwörterbuch der Physiologie, **2**: 131, 1844. (Cited by Kuno (11).)
11. KUNO, Y.: *The Physiology of Human Perspiration*. J. & A. Churchill, London, 1934.
12. MCCULLAGH, E. P.: *Diseases Peculiar to Civilized Man* by George W. Crile. Macmillan, New York, 1934.
13. MILHORAT, A. T., SMALL, S. M., and DIETHELM, O.: Leukocytosis during various emotional states. *Arch. Neurol. and Psychiat.*, **47**: 779, 1942.
14. MITTELMANN, B., and WOLFF, H. G.: Affective states and skin temperature: Experimental study of subjects with "cold hands" and Raynaud's syndrome. *Psychosom. Med.*, **1**: 271, 1939.
15. MITTELMANN, B., and WOLFF, H. G.: Emotions and gastroduodenal function. *Psychosom. Med.*, **4**: 5, 1942.

16. Psychiatric casualties, hints to medical Officers in the Middle East Forces. A Report by General Headquarters, Middle East Forces, British Army, Sept., 1942. (Abstracted in Army Med. Bull., **66**: 113, April 1943.)
17. SILVERMAN, J. J., and POWELL, V. E.: Studies on palmar sweating; I. A technique for the study of palmar sweating. (To be published in Amer. J. Med. Sci.)
18. SILVERMAN, J. J., and POWELL, V. E.: Studies on palmar sweating; II. The significance of palmar sweating. (To be published in Amer. J. Med. Sci.)
19. SOLOMON, A. P., and FENTRESS, T. L.: Galvanic skin reflex and blood pressure reactions in the psychoneuroses. J. Nerv. & Ment. Dis., **80**: 163, 1934.
20. (Unpublished data; Since this Study over 2000 additional tests have been done.)
21. WOLF, S., and WOLFF, H. G.: Evidence on the genesis of peptic ulcer in man. J.A.M.A., **120**: 670, 1942.
22. WOOD, P.: Etiology of DaCosta Syndrome. Brit. M.J., **1**: 845, 1941.
23. ZANUCK, D. F.: Tunis Expedition. Random House, New York, 1943.

At the Annual Meeting of the American Society for Research in Psychosomatic Problems in Chicago June 10th, 1944, the following officers and Council members were elected:

| | |
|----------------------------------|--------------------|
| <i>President</i> | Roy G. HOSKINS |
| <i>President-Elect</i> | JOHN C. WHITEHORN |
| <i>Secretary-Treasurer</i> | EDWIN G. ZABRISKIE |

Councillors:

| | |
|----------------------------------|---------------------|
| <i>For Three-Year Term</i> | JULES MASSERMAN |
| | LEONARD G. ROWNTREE |
| | MILTON SENN |

For Two-Year Term

ELIZABETH HEALY ROSS

Councillors Who Continue Unexpired Term:

| | |
|----------------------------|-----------------|
| <i>For Two Years</i> | DANA ATCHLEY |
| | FLANDERS DUNBAR |
| | CURT RICHTER |

| | |
|---------------------------|----------------|
| <i>For One Year</i> | WILLIAM OGBURN |
| | HARRY SOLOMON |
| | EDWARD WEISS |

REVIEWS, ABSTRACTS, NOTES AND CORRESPONDENCE

PROCEEDINGS OF THE DECEMBER, 1943 MEETING OF THE AMERICAN SOCIETY FOR RESEARCH IN PSYCHOSOMATIC PROBLEMS

PSYCHOSOMATIC IMPLICATIONS OF PAIN

REVIEW OF THE PROCEEDINGS OF THE ASSOCIATION FOR RESEARCH IN NERVOUS AND MENTAL DISEASES, 1943

CARL BINGER, M.D.

The 13th Volume of the Proceedings of the Association for Research in Nervous and Mental Diseases, published in 1943 by the Williams & Wilkins Company is devoted to the subject of pain. It consists of some 450 pages.

In the introduction to the volume Dr. Wolff makes these significant remarks, in speaking of how little use physicians have made of pain in establishing diagnoses. He says, "such disrespect had its origin in a generally shared confusion between the sensory perception of pain and the reaction to the painful experience, with its autonomic, emotional and other components. Pain and pleasure were considered opposites. However, while pleasure indicates a *reaction* of satisfaction, contentment or well-being, pain is a *sensation* like smell, taste, or vision. It is obvious that a *perception* and a *reaction* cannot be contrasted. Although pain usually evokes an unpleasurable reaction, it does not always do so. Once the difference between *perception* and *reaction* is accepted, it becomes possible to use pain as a valuable diagnostic instrument."

This is the key-note speech, but like many key-note speeches its promises are not all fulfilled. The volume deals chiefly with the *perception* of pain and with the various mechanisms which mediate its perception. It has relatively little to offer on the *reaction* to pain, a subject of natural interest to those concerned with psychosomatic problems.

The four opening chapters deal with researches on the reception, transmission and perception of pain stimuli. Hardy, Wolff and Goodell's experiments on the "Pain Threshold in the Skin of Man" are probably well known to you. They describe the threshold as relatively uniform and stable, and as independent of age, sex, emotional state and fatigue.

It is noteworthy that serious damage to the nervous system and profound disturbance in personality function are not inconsistent with a normal threshold for pain. The threshold can be raised by analgesic agents, by distraction, intense concentration and suggestion. It can be lowered in the presence of inflammation of the skin, as it may

be in certain persons described as hysterical, anxious or malingering.

As for the peripheral sensory receptive mechanism, the work of Dr. Sarah Tower inclines toward the view that the element or unit in this organization is not a spot innervated by a particular nerve fiber but rather a terminal area to be measured in square millimeters or even centimeters. In normally innervated skin and cornea many such unit terminals overlap and interlock, but there is no fusion and no evidence of any form of interaction. Dr. Tower states that localization ceases to be conceivable on the basis of local concentration of a single fiber. Her anatomical studies and the physiological ones presented by Dr. Gasser converge in this problem. To quote Dr. Gasser: "In the case of pain I would venture just one statement that seems to be established beyond all reasonable doubt: that pain impulses are carried in both myelinated and unmyelinated fibers. The sensation is regularly reported to be the same whether it be evoked by fast or slow impulses."

Coming now to the "Central Representation of Pain" it appears, according to the studies of Dr. Earl Walker, that there are three levels at which pain may be integrated. The highest level is the cerebral cortex, the second level is the thalamus, the function of which is not so much the appreciation of pain as its integration with other sensory modalities. The third and lowest level of integration of pain is the tectum mesencephali. This is the center which in phylogenetically primitive life perceived pain but in normal man probably rarely functions in that capacity, its powers having been taken over by the thalamus and cortex.

In connection with this study the work of Michelsen should be mentioned in which five cases were described with subjective manifestations of pain in the extremities, associated with cortical lesions.

Dr. Chester Jones presented a paper called, "Pain from the Digestive Tract." Pain stimuli were elicited in various portions of the alimentary and the biliary tracts by mechanical distension. The segmental distribution of referred pain was discussed and the localization of focal disease.

Various factors modifying "sensory threshold" were considered and the frequent diversion of pain localization by the presences of previous disease, particularly by the scars of previous surgical procedures. It must be comforting to the surgeons to know that they can thus throw the yelping pack of internists off the scent. In discussing Dr. Jones' paper Dr. Walter Palmer of Chicago paid tribute to these classical studies and to the beautiful demonstration of what can be done with clinical experimentation.

With these researches as a basis and background for further discussion let me turn to the subject-matter of the papers to follow.

Doctor Chapman's paper deals with "Measurements of Pain Sensitivity." Let us see what this same gentleman said a year ago. Dr. Chapman (with Lt. Charles Kunkle) was then interested in the "*Insensitivity¹ to Pain in Man.*" He described a young adult male who was found to have an almost complete insensitivity to pain, associated with attacks of unconsciousness, beginning in childhood. The only other sensory defect was a moderate impairment of perception of heat and cold. There was a greatly elevated threshold for both superficial pain and deep somatic visceral pain. It was shown that the defect was in the perception of pain and that many, but not all, of the phenomena of reaction to pain were thereby eliminated. This happy man paid frequent visits to the dentist for the care of cavities. At no time did the dentist note any wincing by the patient. The paper brought forth a great deal of discussion—three pages of small type. Like many such stenotyped reports it is perhaps somewhat inconclusive. May I, however, quote Dr. Jasper of Montreal: "I would like to ask how a man who never suffered pain can know what pain is?" And Dr. Chapman's philosophical reply: "That troubled us too."

We now proceed upward to the subject of heart pain to be discussed by Dr. Lipkin. The volume under consideration has one paper on "Pain from the Pleura and Pericardium" by Joseph A. Capps, one on "Cardiac Pain" by Herrman L. Blumgart, one on "The Tension Theory of Cardiac Pain" by L. W. Gorham, and one on "The Effect of Extra-Cardiac Pain on the Heart" by Gold, Kwit and Modell. Dr. Capp's observations lead him to the conclusion that inflammations of the pericardium do not produce pain unless pleural surfaces are involved. Col. Blumgart in his usual lucid, heady and convincing manner discusses one fundamental

aspect of the genesis of cardiac pain, namely, do the pathologic lesions in patients with cardiac pain afford an adequate basis for the operation of the ischemic theory? His studies are based on 500 consecutive necropsied cases. He concludes that in all three clinical syndromes: angina pectoris, coronary failure and myocardial infarction, cardiac pain is an expression of a relative disproportion between the demands of the myocardium for blood and the supply through the coronary arteries. His original question is answered in a well substantiated affirmative: cardiac pain results from ischemia of the myocardium. The fact that effort or emotion, which increases the work of the heart, precipitates pain affords further support to this concept. The possible mechanism of this pain production is brought out in the discussion of Blumgart's paper. Dr. Gorham presented evidence based on clinical and experimental observation to support the contention that cardiac pain may be produced by tension on the walls of the coronary artery. The soundness of his argument was questioned especially by Dr. Levy because no actual blood flow measurements were made to prove that no decrease in it had occurred. Dr. Gold and his associates discovered that severe pain produced in the arm or the head affects the heart and alters the T waves of the electrocardiogram. Furthermore, an abnormal electrocardiogram may become normal during pain, and a normal one may become abnormal, especially in individuals with heart disease, in whom the electrocardiogram is known to be more susceptible to change than in normal persons.

Only Dr. Wolff discusses the reaction to pain. It is treated by almost all others as a perception akin to taste and smell. In the final paper of the volume by Wolff and Goodell, the effect of attitude and suggestion are studied in relation to pain perception. The authors discovered that the pain threshold could be raised as much as 30% by the use of placebos. Prejudice and anxiety almost vitiated the analgesic effects of aspirin. They believe that confidence, feeling of security and the conviction of being helped on the one hand, and on the other, anxiety and lack of confidence may determine whether or not a given analgesic is useful.

These Proceedings include four valuable surgical papers on the relief and management of intractable pain—a subject of timely importance. James C. White's contribution includes most instructive observations on the pathways of visceral pain in man. A clear understanding of such pathways

¹ Italics mine. C. B.

seems to me essential to accurate thinking in psychosomatic medicine.

You will understand that I could not do justice to all the valuable studies published in this volume, presented as they were originally in two full days

of meetings. I have selected from the Proceedings, for particular attention, those papers which seemed to me to have a special bearing on the ones which will follow.

MEASUREMENTS OF PAIN SENSITIVITY IN NORMAL CONTROL SUBJECTS AND IN PSYCHONEUROTIC PATIENTS

WILLIAM P. CHAPMAN, M.D.

I wish to present the results of pain sensitivity measurements in normal control subjects and in patients with psychoneuroses. The type of pain studied was cutaneous pain, which was produced by means of a heat radiation apparatus. To determine an individual's pain sensitivity, two components of the pain experience were measured: (1) the pain perception threshold, which is a subjective endpoint of beginning pain, and (2) the pain reaction threshold, or the first objective evidence of withdrawal from the pain stimulus.

Method: As previously reported by Wolff and his associates, the source of the heat pain stimulus was a 1000 Watt tungsten filament lamp, with the light focussed by two lenses through an aperture 2.5 cm.² in area. Each exposure was kept constant at three seconds by a shutter operated by a telechron motor, and the intensity was varied by a wire rheostat. The amount of heat used was measured directly by a radiometer and expressed in absolute endpoint values of gm. cal./sec./cm.² of skin surface. To promote the complete absorption of the wave lengths, the forehead was first blackened with India ink. With this test the two pain endpoints measured were: (1) the pain perception threshold, which was the lowest amount of stimulus necessary to cause a beginning sharp jabbing or pricking sensation; (2) the pain reaction threshold, which was the lowest amount of heat stimulus which consistently caused the subject to wince. This wincing was noted as a beginning contraction of the muscles at the outer canthus of the eye.

The conditions under which these two endpoints were measured were standardized in the following manner: All tests were made by the same observer. Each subject was tested on at least three different occasions, and each test consisted of from 10 to 14 exposures of light with a two-minute interval between each exposure. Descriptions of the varying sensations were elicited by five neutral questions asked after each exposure:

These questions were:

1. What did you feel?
2. How would you describe what you felt when the stimulus was most intense?
3. Was this one as intense, less, or more intense than the previous one?
4. Was the sensation you felt then like any you have felt anywhere on your body before?
5. (A card with seven numbered circles varying in size from a half-dollar to a pencil point was held before the subject.) He was asked which circle corresponded to the size of the spot on his forehead where the stimulus seemed most intense. It is characteristic of the stimulus that as it reaches the sharp piercing endpoint, it seems to focus down to nearly the size of a pencil point.

The second test was modified in that the subject was asked to keep his head at the aperture until told to move it away, and also in that he was told how the varying sensations are commonly described. This modification of technique was done to see if asking him to keep his head at the aperture made any difference in the amount of stimulus causing him to wince, and also to see if he continued to report the same pain perception endpoint value, after having the various sensations described to him as he had by the neutral question technique alone.

At the end of each test notations were made as to any possible modifying factors, such as fatigue, nervous tension or apprehension. Inquiry was also made as to the taking of any drugs and the number of hours of sleep. When the three tests were completed, "pain" was mentioned for the first time. The subject was asked to define pain and to state whether the initial sharp piercing endpoint seemed to him like a beginning pain sensation.

Results: The normal control subjects studied

for cutaneous pain were two hundred in number, with an almost equal sex distribution, an age range from 10 to 85 years, and were represented by various economic, occupational, social and ethnic groups. By "ethnic groups" is meant peoples who commonly live together and have a common cultural background, although they may be different as regards physical measurements.

The results of the pain perception threshold measurements in the normal subjects showed a variation of -40% to +50% of a mean average value of 0.305 gm.cal./sec./cm.² of skin surface. For a given individual, tested under standard conditions, the percent variation was from $\pm 2\%$ to $\pm 6\%$. The individual percent variation was, therefore, small as compared with that observed for the entire group. Dr. Wolff and his associates found a variation in cutaneous pain perception of not more than a $\pm 15\%$, a smaller difference than observed here. We have no explanation for this discrepancy unless it be a difference in the technique in running the experiment. The spread between the point at which pain was first perceived and that at which wincing occurred varied from 0 for the most reactive type of subject—by a 0 difference is meant that if an individual perceived pain at 0.300 gm. cal. he also winced at that same level—to a spread of from 50% to 70% in the least reactive subject. The average spread between pain perception and pain reaction for the group was 20%. The percentage variation between a given individual's pain perception and pain reaction was anywhere from 0 to 8%.

Age and differences in ethnic groups were the only two factors which appeared to have a conclusive bearing on the cutaneous pain sensitivity levels of the normal control subjects. Both pain perception and pain reaction decreased with age, although there were individual exceptions. The youngest age group, from 10 to 22 years, had an average pain perception threshold of 0.289 gm. cal./sec./cm.². In the age group from 23 to 44 years, the mean value was 0.324 gm. cal./sec./cm.², and for the oldest age group, from 45 to 85 years, the mean value was 0.347 gm. cal./sec./cm.². The changes in pain reaction according to age were parallel to those of pain perception. The spread between pain perception and pain reaction for the oldest age group would have been greater had not the possibility of blistering the forehead prevented in certain instances the giving of an adequate stimulus to cause the wincing endpoint.

For a comparison of ethnic groups, a series of 18 Negroes and a corresponding number of so-called Northern Europeans of the same age and sex were

studied. The mean pain perception value for the Negro was 0.268 gm. cal./sec./cm.², as compared with an average of 0.318 gm. cal./sec./cm.² for the Northern European. Not only did the Negro perceive pain at a lower level but he also reacted relatively nearer his pain perception level than did the Northern European. The average spread between pain perception and pain reaction for the Negro was 0.033 gm.cal./sec./cm.²; for the Northern European, 0.066 gm. cal./sec./cm.². The group of Italians and individuals of Russian Jewish extraction tested had both pain perception and pain reaction values which corresponded more nearly to those of the Negro.

The possibility was considered that increased pigmentation of the Negro's skin might account for the differences obtained. Three other Negro subjects with vitiligo, therefore, were tested on the non-pigmented and corresponding pigmented areas after these areas were blackened with India ink. As the pain perception and pain reaction values for both areas were the same, it was concluded that increased pigmentation of the skin of the Negro could not account for the differences observed in this ethnic group.

It is appreciated that any scientific differentiation of people according to ethnic groups is a difficult one, and that cultural, economic, and educational factors, as well as the number of generations during which the parents of these subjects had lived in this country, might modify the results. While these factors did not appear to be important in the individuals of Northern European extraction, it is admitted that a larger series than 30 subjects will be needed to exclude these conditions as modifying factors in the differences observed in the Italian and Russian Jewish subjects.

A group of psychoneurotic patients studied in collaboration with Dr. Finesinger and Dr. Cobb at the Massachusetts General Hospital included 10 cases of anxiety neurosis, 10 cases of hysteria, and 17 cases consisting of reactive depressions, hypochondriases and compulsive neuroses—obsessional types. The normal controls with which they were compared were of the same ethnic group, sex and age distribution as the patients.

The cutaneous pain perception threshold for the 75 normal controls and the 37 psychoneurotics showed very little difference in the mean values, the mean values for the normal controls being 0.280 gm. cal., and for the patients 0.285 gm. cal. On the other hand, the pain reaction threshold measurements showed a significant difference between the two groups. The mean value at which wincing occurred for the psychoneurotics was 0.311 gm. cal.,

and for the normal controls 0.346 gm. cal. The difference in these mean values is of a critical ratio of over 4, which would indicate a significant disparity. This is also brought out in a comparison of the difference in the spread between pain perception and pain reaction in the two groups. Eleven percent of the psychoneurotics winced even before their pain perception threshold had been reached, as compared with none of the normal controls. Twenty-two per cent of the patients winced at approximately the same level as that at which they perceived pain, as compared with 9% of the controls. At a difference from 1% to 10% between perception and reaction, there were 32% of the psychoneurotics and 12% controls. At a spread of from 10% to 20% between the pain perception and the pain reaction threshold, 22% of the patients were represented and 27% of the normal control subjects. At the higher levels of spread between perception and reaction, there were only 14% of the psychoneurotics, as compared with 50% of the normal controls. It would appear, then, from these figures that psychoneurotics are no different from normals as regards pain perception. The difference that was found was in the hyper-reactivity, in that the spread between the level at which they perceived pain and the level of their wincing or withdrawal was significantly less than in the case of the normal control subjects. There was a tendency for the anxiety neurotics and hysterics to wince with a smaller stimulus than the patients with hypochondriasis. But as yet this series is too small to say that the different types of psychoneurotics can be separated as regards their reactivity to cutaneous pain.

In evaluating these results, it would be well to spend a moment considering the variables encountered in these measurements. The following questions may be asked regarding the technique employed in this study:

1. Is the stimulus used a measurable one?
2. Is the stimulus applied to that portion of the body where the neuro-histologic variations are at a minimum?
3. Does the stimulus produce a readily appreciated endpoint of pain?
4. Is proper consideration given to those factors which at the time of the test may influence the pain sensitivity level?
5. Is the proper question technique used to elicit an adequate description of the stimulus?
1. The stimulus for cutaneous pain was molecular heat measured directly by a radiometer and

expressed as an absolute endpoint value of gm. cal./sec./cm.² of skin surface. Sources of error due to lack of sensitivity of the radiometer and live voltage drop were less than the physiologic error of interpreting the pain endpoint.

2. The forehead was selected as the area of stimulation because of its convenient location, the small fluctuations in skin temperature, and the minimal variation in epidermal thickness. Measurements of forehead skin biopsies demonstrated a variation of not more than a $\pm 8\%$ in six subjects whose pain perception thresholds varied as much as 30%. It would appear, therefore, that differences in epidermal thickness were not important in these conclusions.

3. The sudden transition from a diffuse burning sensation to a distinct sharp prick at the end of an exposure as short as three seconds may account for the fact that 80% of the subjects described adequately the pain perception endpoint by the neutral question technique alone. When asked, 90% of the subjects felt that the perception endpoint was a form of pain because of its initial hurting quality.

4. As it could not be determined which modifying factors were important to control during the test, the best that could be done was to suspect conditions such as fatigue, apprehension, nervous tension, attitude, and medication, and to exclude them so far as possible.

5. The most difficult variable to standardize was the subject's description of the pain perception endpoint. No variations from the descriptions "sharp jab," "sharp prick," "jab of a wire" or "needle prick" were accepted. We attempted to obtain the description of the pain perception endpoint in such a manner as to prevent the subject's idea of it from being conditioned or influenced by another's interpretation. As such descriptions were considered to be of more value when the examiner made no comments prior to the performance of the test, the neutral question technique was used. It is interesting, however, that 80% of the subjects reported the same perception endpoint after having been given the accepted descriptions as they had previously reported by the neutral question technique.

In conclusion, we believe that these studies indicate considerable variations in pain perception and pain reaction. The clinical significance of these differences in pain perception and pain reaction have not been established, but in future studies we hope to be able to throw light on this point. We have no explanation for the differences found in different ethnic groups. We have no

explanation for the decrease in pain sensitivity with age. It is interesting, however, that Dr. Raymond Morrison at the Massachusetts General Hospital, in his study of spinal cord changes with age, has found axon degeneration and increased gliosis formation in the areas where the pain tracts cross in the spinal cord. Our experimental results may be in keeping with such anatomical involutional changes with age. There may, of course, be other nervous system changes to account for decreased pain sensitivity with age, either by way of impaired nerve conduction or by whatever mechanism that has to do with decreased alertness on the part of the subject.

The psychoneurotic patients observed were no different from the normal controls as regards pain perception. They were different, however, as regards pain reactivity in that they withdrew from stimuli that were significantly lower than for the normal controls. It may be that the variations in pain perception represent a problem of sensory reception and that what has been described as pain reaction represents a more complicated pattern of behavior, which may assume actual clinical importance as demonstrated in the psychoneurotic patients.

Dr. Dunbar: Dr. Binger, in his review of pain as discussed in the Proceedings of the Association for Research in Nervous and Mental Diseases, has called attention to some gaps in our knowledge. Pain seems to be a psychosomatic problem, and one which has not been sufficiently investigated.

Dr. Chapman has presented some concrete observations relative to the controversial question as to whether or not different persons have a greater or lesser sensitiveness to pain. He has admitted that it is very difficult, with our present experimental techniques, to answer this question. There seems to be a considerable variation in response to pain stimuli but the problem remains: Is there a difference in physiological threshold or a difference in the response of the total personality? It may be true that the response to pain is quicker (the pain threshold is lower) in younger people than in older people. But whether this is an actual physiological difference or a response based on greater experience and different inhibitions in one group as compared with the other remains an unanswered question.

Those who are studying pain by means of physiologically oriented techniques may be inclined to explain this as a phenomenon of senescence referable to cellular changes alone, but it may also be related to changes in the total personality, which is the fluid medium of the cells in the aspect of its greatest extension. There is evidence that what Coghill called the total personality factor including patterns of inhibition and emotional response can produce changes in behavior which may

be confused with changes in the cells, or may induce changes in the cells themselves.

Many of those who have been interested in pain in disease or behavior have been forced to take into consideration the meaning to the individual of pain of any particular quality or at any particular site. We have concrete illustrations of this point in the different responses of different individuals to the same degree and type of anesthesia and in the variability of response in the same individual, depending on his emotional state. From experiments with hypnosis we know that sensitivity to pain stimuli may be modified or completely eradicated. Stick a pin into a person in a deep hypnotic state and he may or may not report a subjective sensation of pain, although he may react physically to the stimulus. Even the deeper or more complicated physiological responses to the stimulus may be altered. He may not bleed, or he may bleed profusely—depending on his personality as affected by the suggestion. Suggest to him at the same time that the stimulus is not painful, and he may not even react physically. Both processes probably involve the cortex, but in the first instance the inhibition applies only to perception and memory, and in the second instance it applies to motor response as well.

Much of the confusion in this subject arises from the failure to define pain before discussing it. Some of us study pain as a subjective experience; some of us as a reflex or a group of reflexes resulting from the application of a stimulus that can be quantitatively measured.

We know that pain makes many people angry. This anger reaction plus its physiological accompaniments, results in altered psychological behavior and so in altered physiological functioning. Some people fear pain and still others enjoy it. Cultural influences in addition to the nature of personality integration determine which type of reaction predominates.

Rage seems a more common response than fear as a complicating reaction in a well-integrated person. It is likely to occur in persons who have been brought up under standards of responsibility and courage. Fear occurs in the type of person who has been over-protected and in whom a recognition of "natural rights" has been over-stressed. Enjoyment of pain occurs in persons who feel they can't hold their own. The repression of any reaction resembles the process of self-anesthetization. It may be temporarily objective, but only temporarily.

Dr. Chapman has said that psychoneurotics respond to pain stimuli about as promptly as the more nearly normal in their own racial and age group, but that they appear to react to the stimulus more quickly. It would be interesting to know whether or not this observation remains valid after examining a larger series of cases and if so to look into the psychosomatic implications of this phenomenon.

From the point of view of psychosomatic research it might be interesting to ask: What role is played by greater or lesser sensitivity to pain or by a slower or quicker response to pain stimuli in determining sus-

ceptibility to disease? It may be said that pain or discomfort represents in most individuals a first awareness of physiological dysfunction or disease. Hence, the problem of the role played by personality factors in chronic illness might be illuminated by an attempt to answer the question: Is a low or a high pain threshold an asset or a liability? Is a quick or a slow reaction to pain an asset or a liability? From the point of view of preventive medicine a low pain threshold might get a patient to the doctor more quickly, but a too quick response to a pain stimulus might also result in irrational behavior, at least in some persons.

We will probably know very little about the subject of pain until quantitative studies such as those reported by Dr. Chapman have been supplemented by qualitative studies which include the role played by the personality as a whole, or, in other words, the psychosomatic implications of pain.

Dr. Milton Erickson: When a pain stimulus is given, the hypnotic subject, after a brief lag, will react to that pain as if it were occurring at a point some distance from his body. These subjects seem to dissociate that part of their bodies. In addition, often if hypnotic subjects who actually do have pain, such as an injured fingernail or felon, are put in a trance without endeavoring to produce any anesthesia, they will tell you after you have been working with them on some other unrelated problem that something has happened to their hand. It seems to be dissociated from them. If you ask them to describe the pain it is very difficult to get an adequate description. "It hurts. It does not feel right." They describe it very much as you would describe a pain in somebody else.

They can also prolong a pain stimulus which should result in immediate wincing and dying away of the pain feeling. The painful needle prick can be felt three or four minutes later. If this happens these subjects are likely to dissociate the hand in order to get rid of the subjective sense of discomfort.

The hypnotic subject can also break up pain into its possible components. He will develop an analgesia for the painful elements of it but will feel pressure. He will feel a sudden touch and describe it to you in those inadequate terms. The subject may sink into a still deeper hypnotic sleep, into a more stuporous state. In that way he seems able to run away from the pain, to escape it, by going into a deeper level of trance.

Concerning the speaker's remarks about the psycho-neurotics of the anxiety type, I agree that they do react excessively to slight pain reactions, and the anxious, fearful psychoneurotic put in the trance state will react to pain in the same way that the normal hypnotic subject does, that is, he may dissociate the hand or sink into a deeper trance or prolong the pain, or develop a spontaneous anesthesia, or break the pain stimulus up into analgesic components.

As to reactions in terms of age, my finding is that small children show the same type of response to pain in the hypnotic state as do adults. One particular

subject that I had showed this very significant reaction. I had some electrodes tied into his hand to build up his induction response. His reaction to electrical shocks interested me, so I increased the current. Each time he received the shock his hand clenched and the muscle in the forearm contracted to what seemed to me as I tested it on myself a painful degree. Each time I closed the switch and rang the buzzer the subject would give the proper response and each time as his hand slowly relaxed he would look at his forearm and slowly watch the muscle relax and then tell me that it hurt. When I merely rang the buzzer without giving him the electrical shock he again showed the conditioned motor response, and then again told me that the muscle hurt. He seemed to feel that it was a very definite hurt.

Dr. Chartock: Were any studies ever made on psychotic patients? They have been made on psycho-neurotics and hypnotics, and psychotics might give a response similar to animals or hypnotics, because they are withdrawn. I have noticed that some psychotics seem to react in a normal manner to pain.

Dr. Henries: I want to ask if there has been any information on personal sensitivity to drugs. I have seen several cases in which it seems that the fear of being helpless in the drug state was more of a factor in the idiosyncratic reaction to morphine than a reaction which might be explained physiologically.

Dr. Schreiber: I would like to ask Dr. Chapman how he established the normal group, what his criteria of normality were, and specifically how he excluded neurotic character or psychopathic personality trends which so easily can mask normality.

Dr. William Chapman: Three schizophrenic patients were studied. We put a few blisters on them and still they did not seem to be interested in the pain stimulus. As far as the pain perception is concerned, they seemed to be pre-occupied in describing what the quality was like.

In regard to the criteria of normality, the normal control subject as we accept that term was an individual who complained of no ailments and who on a recent physical examination did not reveal anything due to a diseased condition. We are well aware of the fact that in any large group of the population there are going to be a small percentage of subjects who upon careful psychiatric examination will show abnormal behavior patterns. However, assuming that such a group was included in our normals, we feel that it would be so small that it would not alter considerably the quantitative determinations found.

I am not quite sure that I understand the question about the idiosyncratic reaction of the drugs. I can say that in testing 24 different subjects with mono-acetyl morphine and comparing it with the effect of a quarter of a grain of morphine per 150 pounds of body weight we had three individuals who had no eleva-

tion whatever of the pain perception or pain reaction threshold, that is, they had no elevation of threshold either with mono-acetyl morphine sulphate or morphine. When we tested with nitrous 20 percent oxide they

also had no elevation of either pain perception or pain reaction threshold, and those individuals happened to be the type who had a very small spread between the pain perception and the pain reaction values.

"HEART" PAIN WITH AND WITHOUT STRUCTURAL ALTERATION

MACK LIPKIN, M.D.

For the purpose of brevity I am confining my survey to the anginal syndrome, or angina pectoris, and to the anxiety states with cardiac symptomatology, for these are the most common types of so-called "heart-pain."

For our purposes, we can group these pains in the following way: first, the pain directly caused by heart disease per se; second, pain referred to the heart not due to heart disease; and, third, the mixed pictures.

First, pain due to structural heart lesions. The etiology can be crudely summarized as follows: the heart muscles' ability to perform is a function of the amount of blood and oxygen available through the coronary arteries; it is probable that anginal pain occurs when there is a disproportion between the work demanded of the heart and the oxygen and blood supply; reduction in blood and oxygen supply may be caused by narrowing or occlusion of coronary arteries or reduction in the caliber of the arteries through vaso-motor reflexes.

There is strong evidence that vaso-motor reflexes play an important part in the production of attacks at any given time, and it is well known that these reflexes may be initiated by strong emotional stimuli as well as by cold, distension of the stomach, etc.

The clinical characteristics of the anginal syndrome are remarkably constant in different patients and in different groups. I should emphasize at this point that there is no known physical finding, no x-ray, and no electrocardiographic picture which can tell you that the patient has or has not pain of cardiac origin. The diagnosis must always, in the last analysis, be based on the history alone.

True anginal pain—that is, pain due to inadequate blood supply through the coronary arteries—is preceded by an awareness that there is "something wrong in the chest." The pain itself is described as "squeezing," "constricting," "pressing," or a "deep gnawing." It is always a steady pain, the intensity of which mounts increasingly until the patient rests. Almost always, the pain

begins in the mid-line, somewhere between the supra-sternal notch and the xiphoid; it may, however, spread to involve an area slightly to the left and right of the midline. The characteristic radiation is along the inner margin of the left arm, but radiation to the left side of the neck, the jaw, the right arm, and left upper chest is not unusual. The pain is never referred to the apex and rarely described as "knife-like," "like a stitch," or "darting." Usually the pain lasts from one half to three or four minutes; seldom as long as ten or fifteen minutes. When it lasts more than thirty minutes a myocardial infarction is almost certainly taking place. The pain characteristically appears under certain circumstances—while walking up an incline, especially stairs, on attempting to walk fast, on walking against a cold wind, after heavy meals, during intercourse, and during emotional storms. It can be induced in many patients by having them breathe low oxygen mixtures or by vigorous exercise. It is readily relieved by stopping the exertion of the moment, by the use of nitrites, and, in many cases, by taking alcohol. Of course, the pain of myocardial infarction is not necessarily or even usually precipitated by exertion.

We turn now to the type of heart pain which is not due to disease of the heart—to pains which, as it is surely unnecessary to emphasize, no more represent disease of the heart than hysterical blindness represents disease of the eyes. The probable origin of pain of this type is anxiety. The patient's attention is focused on the heart by certain circumstances, the commonest of which are: 1) the occurrence of some dramatic case of heart disease among the acquaintances of the patient; 2) the appearance of such symptoms as sudden skipping, a flutter, of an unusual palpitation which causes the patient to become conscious of his heart; 3) a casual statement by an insurance examiner, or some other physician about a murmur, an unusual rate, or anything else which may alarm the patient about his heart. Conversation with some alarmist friend or relative often completes the damage; 4) some emotional disturbance—not

necessarily one which calls direct attention to the heart.

The characteristics of this pain are very different from those of the true anginal picture. The pain is usually localized in the outer precordium, especially in the region of the apex, probably because most people believe the heart is located somewhere in the outer part of the left chest. In several instances in which patients were told of the location of the heart and the usual site of pain of cardiac origin, I have observed prompt shifting of the area of pain. The discomfort is rarely described as constricting or heavy. The neurotic type is always described as "sticking," "burning," "like a stitch." In contrast to the short anginal attacks, the pain usually lasts hours or even days; and it is not steady but comes and goes. While long duration is not invariable, it is so common that it is a useful guide. Again, in contrast with anginal attacks, the intensity of the pain changes from moment to moment, is not related to exertion, and usually is not immediately relieved by rest or nitrates. Occasionally patients state that nitroglycerin works, but only after ten or fifteen or thirty minutes. The presence of other neurotic symptoms, particularly sighing respirations, the globus sensation, marked apprehension, obvious anxiety, and evidence of tension are usual, but not invariable. Evidence of vaso-motor lability, such as sweating palms, cold hands, rapidly fluctuating pulse and blood pressure are often present. Precordial pains occur with gall-bladder disease, spondylitis, fibrosis, intercostal neuritis, and diaphragmatic hernia, but complete differential diagnosis is beyond the scope of this paper. Sharpe, Chassin and I have found the following questionnaire useful in establishing the differential diagnosis in our work at Post-Graduate Hospital: 1) Where is the pain? Can you point with one finger to where it hurts most? Where else do you feel it? 2) What kind of pain is it? 3) What brings it on? (Patients with angina can generally state exactly what circumstances precipitate attacks, while patients with neurotic pain generally cannot relate it to any particular activity and are often puzzled by this question.) 4) How long does it last? 5) What happens when you walk up stairs? 6) if you hurry? 7) if you walk against a cold wind? 8) during intercourse? 9) after a heavy meal? 10) if you are worried or upset? 11) What relieves the pain? What does nitroglycerin do? 12) Did anybody frighten you about your heart? 13) What have you been told about this pain? 14) Do you know anybody with heart trouble?

In summary we may then say that the site, the duration, the precipitants of the pain and the means of obtaining relief will make the differential diagnosis relatively certain.

The third group for discussion is that group with both heart disease and neurotic manifestations. Obviously, heart disease does not confer immunity to neurosis any more than neurosis confers immunity to heart disease. In fact, the two frequently co-exist. Since the symbolic value of cardiac disease is great, since the laity associate it with sudden death and since some of them believe each anginal attack means the destruction of small areas of heart muscle, it is to be expected that sooner or later most cardiac patients will go through periods of anxiety about their hearts. During these times the picture may be confusing but careful history combined with knowledge of the symptomatology will make it quite clear which of the symptoms are due to structural change and which are due to anxiety. Typical anginal pain and pain in the apical area of neurotic pattern demand different management and advice for the two separate conditions. Also, if attacks of anginal pain are regularly precipitated by emotional disturbance, psychotherapy is as urgently needed as medication or restriction of activity. Very frequent sighing respiration indicates that anxiety is present regardless of the extent of cardiac damage. The same is true of other common evidences of anxiety, but sighing respiration is particularly important because it is so commonly confused with exertional dyspnea by patients and occasionally by physicians. The scrutiny of collateral symptoms, such as dyspnea, edema, paroxysmal and nocturnal dyspnea and cough, are vital in estimating the degree of cardiac impairment, and the progression of change is sometimes manifest on examination with electrocardiograph, x-ray, and measurement of vital capacity.

It is of interest to mention one patient in whom angina had been present for many years, usually precipitated by walking up stairs or walking fast on a level stretch. She knew that attacks would disappear in two to three minutes if she remained very quiet. She was seen on the hospital ward where she had been sent by a clinic physician because of persistent pain sharply localized in the apical region about four inches from the mid-sternal line which was thought to be due to myocardial infarction.

It was perfectly obvious on questioning that this constant pain was due to anxiety precipitated by the sudden death from heart disease of a relative. Despite her previous insistence that the pain was

terrific, the reassurance that it had nothing to do with the heart caused her to climb out of bed, and indignantly demand her clothes and immediate discharge. She would not even discuss the anginal pain. She knew perfectly well how to control that.

MANAGEMENT

One of the most important procedures, in my opinion, is a precise diagnosis at the first possible moment. The nature of the pain is determined by careful history, but the history must be followed by meticulous physical examination and, if possible, by x-ray and electrocardiogram. Careful examination, *per se*, is reassuring. There can be no hedging, because hedging breeds cardiac neuroses. An indefinite diagnosis and uncertainty on the part of the physician too often lead to such remarks as "not much wrong with the heart, but take things easy." It must be a remarkably dull patient who fails to appreciate the contradiction. If the examiner is certain that the symptoms do not point to organic heart disease, it is infinitely preferable to say flatly that the heart is sound and that there is no reason whatever for the patient to pay any attention to it. Mackenzie, Conner, and others, have pointed out that the advice to exercise is very valuable at this point. The prescription is a reassuring one and exercise in itself seems to be a potent method of relieving tension, especially when taken out of doors and in pleasant company. Of course, the removal of the focus of the patient's anxiety is sometimes followed by the prompt development of symptoms elsewhere. It is, therefore, important to determine the origins of the patient's anxiety and to use appropriate psychotherapy.

In those patients who have structural disease which demands restrictions, the general rule laid down by Mackenzie—that those activities which can be managed without breathlessness, pain, or very forceful action of the heart should *not* be curtailed—seems completely sound. Far too often patients have been urged to give up an active life—business and social—with the net result of a leaden existence; preoccupation with cardiac symptoms, increase in tension—and further damage to the heart. One or two hours rest during the day may be enough to enable the patient to carry on. Judicious use of nitroglycerin and alcohol as prophylaxis as well as during attacks, will keep most patients relatively free from symptoms. It is preferable, I believe, to teach the patient how much he can do, rather than how much he must omit. Very gradual progressive exercise and other activity often is rewarded by gradually increasing

tolerance for effort. On the other hand, short periods of rest, carefully supervised, may produce great benefit. Correction of obesity, of unwise eating and smoking habits and of anemia, if it exists, is helpful.

Part of good psycho-therapy must consist of acquainting patients with the nature of their illness and exactly what restrictions must be observed. There is no room for an alarmist attitude. Psychotherapy, particularly of the type of reassurance, suggestion and help in solution of immediate conflicts, is almost indispensable, but attempts at more than surface psychotherapy are, I believe, risky except in skilled and cautious hands.

A review of what has been learned is more useful if it furnishes a guide to future as well as present action. There is need for study of several groups of problems related to heart pain. Dunbar and her associates have done an extremely provocative study on patients with anginal syndrome. Her cases were of adequate number, submitted to careful, detailed examination, and compared with patients with other syndromes as controls. She believes that the personality profiles of these patients is a fairly characteristic one. If this work can be confirmed, it will be of great value in diagnosis, prophylaxis and treatment. It seems important to check this work at other institutions, perhaps using other psychometric methods. We need similar personality studies of patients with anxiety symptoms centering around the heart. They might contribute something to the old question of the choice of neurosis. Rorschach studies on patients with angina and with so-called cardiac neurosis might well yield some light. There is need for education of the public on the subject of pain and the heart.

Most clinicians have a clear impression of the benefit to be derived from suggestion in the treatment of angina—as in the treatment of most disease. All of us have had patients report excellent results—increased exercise tolerance, lessened frequency and duration of pain, etc. after medication which was later shown to have no specific effect. It would be interesting to determine quantitatively whether the increase in tolerance is real or illusory by using measured exercise and testing the tolerance for low oxygen mixtures. Because suggestion is so frequently effective, we practicing clinicians are in urgent need of more information on its mechanisms. We realize that suggestion is difficult—often impossible—to measure, since so many variable factors influence the patient's receptivity; yet it is rather astonishing that what is probably the most widely used

therapeutic technic in the history of medicine has received so little serious study.

Dr. Edward Weiss: The excellent discussion by Dr. Lipkin leaves little to be said regarding the characteristics of pain of the functional and structural heart disease groups, and therefore I shall pay very little attention to that aspect of his paper, but say a few words about the relation of the emotions to actual structural heart disease.

I have just one or two points regarding the so-called functional group. One of them is that the diagnosis had better not be established simply on the basis of the characteristics of the pain, that is, not simply by the exclusion of organic heart disease but by a study of the personality of the individual. In other words, in so-called functional heart disease, or in any other of the functional group, the diagnosis is to be established on a positive basis as well as a negative basis. Neurosis in other words has its own characteristics to be made out by means of personality study.

One other point in regard to the so-called functional heart disease or cardiac neurosis, which of course is psychoneurosis with cardiac manifestations, is that often when we get to know a patient we discover that the more important symptom is fatigue and that the pain is a secondary symptom of which the patient complains; but once you remove the fear of actual heart disease then pain often diminishes and the fatigue which underlies and precedes it comes out as the dominant symptom. This relates to the question of neuro-circulatory asthenia or effort syndrome, which seems to play a lesser role in this world war than it did in World War No. One. Just why I don't know, but one of the questions there is whether neurocirculatory asthenia in itself is a very good term for a disorder of the total personality when it calls attention to a part. Long ago we learned that we had better give up the name "disordered action of the heart" or "irritable heart of soldiers." Neurocirculatory asthenia also has heart implications in referring to circulation and I wonder if it does not belong in the field of psychological medicine.

The next question relates to emotions and angina pectoris, true angina. Often it is said that not only effort but emotion brings out the pain of angina, but too seldom is the actual content of the emotions described. That is a field in cardiology in which we could have I think a little more light. I would like to recite just briefly one case, a fragment of a case, which perhaps will throw some light on that question; a middle aged hypertensive woman with typical angina pectoris of effort also developed attacks in response to emotional tension. She stated that she frequently would awaken from a dream with an attack of pain and the following is an example: For two or three years her only son had been going with a girl and then suddenly announced to her and the family that the girl was pregnant. It was a great blow to her but they arranged a hasty wedding and she made up her mind that she would not lie about this situation. Her

sister-in-law, who occupied a special place in her life and for whom she had a great deal of unsuppressed hostility, was outraged. "She carried on something awful," as the patient described it. She insisted that she could no longer see her friends or go to church. The patient tried to reconcile herself to the situation. She too was very much concerned as to how she was going to deal with the other members of the family and her friends. During this period she was sleeping badly. She would awaken from a dream, short of breath, frightened and with typical anginal pain under the sternum and down the arm. In the dream which I want to relate to you she says she picked up a child that had blonde hair like the daughter-in-law to be but the child was two years old and very heavy. She had a feeling in the dream that lifting this heavy child would cause pain. She awoke with great pain.

In discussing the dream it was clear that if this child were only two years old the whole disgraceful matter would be far behind her and moreover, to quote her words, "this was really too much of a burden for me to carry."

I would like to suggest that the emotional content of anginal pain is a problem of considerable importance, and as Dunbar and Wolfe many years ago pointed out, the patient with so-called functional heart disease may live out a normal span of years, suffering it is true and causing suffering to the other members of the family, but the patient with organic heart disease who adds or who has added the extra burden of anxiety may break down with heart failure long before the time that such a person should.

The same thing relates to coronary occlusion, which is a special subject of great importance in regard to pain and heart disease. It is usually very easy in the absence of hypertension or coronary disease to make this differential diagnosis, but when hypertension and evidence of coronary disease are present then we are in particular difficulties.

Not long ago we had a diabetic patient on the wards at Temple University Hospital who was there for a brief period of standardization. She was admitted to the hospital under protest. She didn't want to come. Her physician insisted. The duration of her stay was longer than she wanted it to be. During the time that she was there she frequently observed other cases near her, other patients being demonstrated to students, and she insisted to the nurse and to the interns and residents that this must not happen to her, that she could not stand it. She knew what her heart would stand. On the day that she was to be discharged from the hospital, about the tenth day, she was out on the sun porch awaiting discharge and one of the attending physicians knowing nothing about this subject asked to have her brought to the ward for demonstration to students. The nurse went to get her. As the nurse went to get her she flushed because she apparently already realized what was in store for her. She protested. She was led to the ward nevertheless. She insisted that she could not enter. The intern slapped her on the back and urged her to come. The attending physician began

a demonstration and asked her a question or two, which she could not find the strength to answer. When the demonstration was over, full of humiliation and rage, she went out to the bath room, as she said "to have a good cry." She did not succeed in having it but instead she got a pain in her chest. She came back to the ward, insisted that her home physician must be called for because she was going to die. The intern said she was hysterical. Nevertheless an electrocardiogram was done. She had a coronary occlusion. She made a good recovery from that coronary. It is interesting that whereas according to the intern she had been one of the most difficult patients he ever had to handle she was completely docile after she developed her coronary occlusion. Fortunately she made a complete recovery and is well today.

One of the points therefore that I would like to emphasize in relation to pain and heart disease is that the emotions are even more important in the presence of actual heart disease. They can bring about typical anginal pain. They can, I feel quite confident, bring about coronary occlusion as well as congestive heart failure long before it is due.

Dr. Kubie: We hear a great deal of caution spoken about the question of therapy and particularly deep therapy in the presence of cardiac disease. Ordinarily where we do hear cautious words uttered of that kind they are on the basis of quite specific experience, and I would like to know how much information we really have as to the incidence of cardiac accidents in people who are undergoing any of the deeper forms of psychotherapy.

Dr. Mack Lipkin: In answer to Dr. Kubie's question, I can, if you want personal experience, say that I know of one patient only, who in rather good and careful hands developed very frequent repeated and severe anginal attacks while at rest, apparently under the stress of the material turned up under the analysis. I have also seen patients with angina much upset and having more anginal attacks, apparently as the result of well-intentioned but inexpert and awkward probing by internes and others of the younger clinicians.

Nobody, I am sure, will disagree with Doctor Weiss' emphasis on the need for diagnosing neuroses on the basis of positive evidence rather than by exclusion. I would like to thank him for his lucid discussion.

ANIMAL BEHAVIOR STUDIES BEARING ON THE PROBLEM OF PAIN

H. S. LIDDELL, Ph.D.

Although nocuous stimulation commonly leads to a primitive and stereotyped reaction which H. G. Wolff has characterized as fight—flight—anxiety, his careful studies of the action of opiates have made clear how the experience of pain may be dissociated from this seemingly inevitably primitive pattern of action. A brief review of the modifications to be observed in the behavior of dog, pig, sheep and goat following upon nocuous stimulation of the skin by electric shock where conditioning procedures are employed may throw some light upon the influence of habituation in the animal's adjustment to situations and stimuli threatening injury.

Pavlov (4) long ago observed that the dog standing in the conditioning frame reacted to electric shock on the paw by violent struggling. Equally violent attempts to escape followed the sound of a metronome signalling the approaching shock. However, when the dog was fed, sometimes forcibly, upon numerous occasions following the electric shock it eventually transpired that very strong shocks or even burning the skin caused the animal to salivate, wag its tail and turn toward the food dish. The former fight-flight reaction to this nocuous stimulation of the skin could be reinstated, however, if during the same experiment

the electrodes were successively applied to a number of widely separated spots.

G. F. Sutherland (2), in our laboratory, obtained similar results during his conditioning studies in the pig. The young pig, trained to get food by opening the cover of a box at the sound of a door buzzer and to distinguish the buzzer from a door bell where the bell was never followed by food, failed to give the customary reaction to the electric shock applied to the skin of the foreleg when the shock followed the sound of the door bell, that is to say the signal for no food. Although the pig deliberately flexed its leg it also opened the cover of the food box without outcry. If this animal, on the same experimental day, were tested in an unfamiliar laboratory room, a single ringing of the bell followed by shock occasioned screaming and violent tantrum and the second ringing of the bell evoked equally violent defensive behavior. When, at the end of the day's experiment, the animal was brought back again to the original training room, an environment colored by food memories, the bell once again elicited the former deliberate box opening and kneeling at the shock. We had many times observed that a pig trained to expect electric shock in a room with no food associations exhibited resistant behavior throughout the tests

and shortly became unmanageable. Moreover, Marcuse and Moore (3) recently found that behavior closely similar to the tantrum aroused by expectation of the shock could be observed in a full grown pig during salivary conditioning experiments when the chain about its neck was loosened. In this case the pig's screaming and struggling were associated with a sudden and unaccustomed increase in freedom to move the head.

For a number of years we have observed conditioned motor reflexes in the sheep and goat, employing mild electric shock to the foreleg as unconditioned stimulus. An electrode bracelet wrapped around the shaved skin and connected with a Harvard inductorium was employed as a crude means of determining the threshold shock necessary to elicit foreleg flexion. The threshold was found to be quite constant in a number of sheep and goats, including both normal animals and those dwarfed and enfeebled as a consequence of early thyroidectomy. When the animals were accustomed to standing quietly in the Pavlov conditioning frame their reaction to a shock well above threshold but only mildly disagreeable to the experimenter's touch exhibited progressive modification from vigorous struggling to a final stage of brief, precise flexion of the forelimb. Where the sheep or goat was long practiced in associating the shock with the clicking of a telegraph sounder it was found that there was little, if any, cardiac acceleration to the shock itself in a long delayed conditioned reflex where the sounder regularly clicked for 100 seconds before the shock. If, however, the same animal were subjected to an unexpected shock, the cardiac acceleration was pronounced and sustained but did not exceed the acceleration noted when the experimenter entered the animal's room at the conclusion of the daily hour-long test. One might say that in the well stabilized conditioning situation the sheep or goat's muscular and cardiovascular systems show evidences of an acquired skill in reaction to the standardized noxious stimulation of the skin. This attainment of skill may, however, be only a way station on the road to a terminal motor disability. For example, in experiments in progress for the past six months sheep and goats are being subjected to daily tests according to a fixed time schedule. On each day a telegraph sounder clicking once a second for 10 seconds is inevitably followed by a shock to the foreleg on 20 occasions and these 10-second tests are separated from one another by 2-minute rest intervals. Since the beginning of this daily routine in June, three of the eight animals, including two goats and one sheep,

now exhibit a definite spasticity of the trained forelimb. At the end of the tests, as they stand in the harness waiting to be released, the foreleg is in some cases rigidly extended as if in rigor mortis and opposes great resistance to the experimenter's attempts to flex it, while the other forelimb may be easily flexed. During a typical test, with the first clicking of the sounder the animal stiffens the foreleg and attempts to raise the rigidly extended member from the platform by movement from the shoulder. The limb then suddenly flexes and is held in the flexed position until the shock elicits some further flexion. In one sheep the limb was maintained in the flexed position after the shock and thereafter behaved as if a heavy weight were attached to it, the limb giving way by small jerky movements until full extension was attained. While the animal is standing quietly between tests the foreleg is often held in an awkward pose, either partly flexed or placed on the platform to the side of the usual resting position. In the sheep and goat during the early stages of training the animal makes vigorous attempts to run both at the signal and shock while prevented from doing so by the harness. In the animals we have just described, however, where the greatest difficulty seems to be experienced in flexing the forelimb at the signal and an awkward stance is maintained between tests, it seems as if this limb had removed itself from the stream of locomotion. Moreover, its extreme sensitivity to a touch of the experimenter's finger suggests the onset of a sensory as well as of a motor disorder.

Another outcome of noxious stimulation applied to the skin of the forelimb under rigidly enforced circumstances of the conditioning routine has been described in a recently published study from our laboratory. W. T. James (1) trained two dogs, a German shepherd and a basset hound, to avoid an electric shock by raising the forelimb at the clicking of a telegraph sounder. After 5 seconds of clicking, if the animal's foot remained in contact with the platform, a series of shocks from an inductorium was administered, but the shocking circuit could be broken by lifting the leg. The stimulus pattern consisted of the sounder clicking alone for 5 seconds but coinciding for another 5 seconds with the shock. At any time during the second 5-second period the animal could discontinue the shock by raising the leg. After preliminary training the string from the dog's foreleg was attached to an adjustable spring scale whereby the pull required by the animal to break the shocking circuit could be progressively increased until the animal was just unable to pull hard enough to lift

the leg and discontinue the shock. Under these circumstances the basset hound continued making vigorous attempts to raise the limb, coming willingly to the laboratory and showing little refractory behavior until the 21st series of tests when it began to make violent efforts to escape from the harness throughout the daily test period and resisted entering the experimental room. At the beginning of the series of tests with the stiff spring when the pull required was too great for the basset hound to effect, an attempt was made to increase the electric shock, but this the animal could not endure, and it was necessary henceforth to keep the shock at the training strength. The German shepherd, on the other hand, soon showed loss of initiative and simply suffered the shock, whimpering and biting at its harness, although it still came willingly to the laboratory and remained quiet between tests, even when the shock was increased by degrees to the maximum strength. After the 41st series of tests this dog also became unmanageable and, like the basset hound, avoided the experimenter in the kennel and resisted coming to the laboratory.

The two experiments just described, namely, the freezing of forelimb movement in the sheep and goat and the loss of nerve in the dog, illustrate states of disordered behavior arrived at by subjecting the animal to noxious stimulation under experimental conditions which strictly limit its spontaneity of action. In the first case the animal is trapped in a rigid time schedule, that is, it is temporally trapped. In the second case the dog is forced to undergo noxious stimulation through its inability to withdraw the leg. It is spatially trapped. Might we say that where our pig believed that shock meant food and therefore reacted to noxious stimulation without emotional upset in the expectation of being fed, it was mentally trapped by the experimental situation into misconstruing the significance of changes in its environment? We have heretofore avoided such mentalistic terms as pain. We had then best allow the psychiatrist to frame our last question in his own way.

In conclusion, a word on the medical significance of animal behavior studies. Medical investigators will readily accept the dog's heart, his stomach, or his kidney as a proper object of medical scrutiny because results of such scrutiny may bear directly upon the solution of urgent clinical problems. Many incline, however, to be professionally uninterested in the dog's or other animal's behavior because of the gap between the simple life situation of the domesticated animal and the culturally complex and tangled history of the patient.

To the busy physician such studies as have just been described may seem a well meant but unprofitable divagation from the urgent tasks of medical research. Those of us who are engaged in the experimental analysis of behavior with medical intent are not disposed to attempt to make much out of little. It is interesting to note, however, that when under pressure of war the military pilot is forced to learn to fly the high speed fighter or bomber, disabilities such as loss of nerve and freezing on the controls pose an important problem for aviation medicine. It is possible that the motor disorders of animals consequent upon rigid conditioning may contribute to the medical management of the unfit pilot. The student of animal conditioning can, at least, serve notice of his serious medical intent and of his desire to collaborate still more closely with his colleagues in the clinic.

REFERENCES

1. JAMES, W. T.: The formation of neurosis in dogs by increasing the energy requirement of a conditioned avoiding response. *J. Comp. Psychol.*, **36**: 109, 1943.
2. LIDDELL, H. S.: *Personality and the Behavior Disorders*. Edited by J. McV. Hunt. New York, Ronald Press, 1944.
3. MARCUSE, F. L., AND MOORE, A. U.: Tantrum behavior in the pig. In preparation.
4. PAVLOV, I. P.: *Lectures on Conditioned Reflexes*. Translated by W. Horsley Gantt. New York, International Publishers, 1928.

Dr. Jules Masserman: The lack of opportunity to read Dr. Liddell's paper will make it impossible for me to give it the conscientious consideration it deserves.

However, I am very grateful to see Dr. Liddell taking the lead and swinging away from the purely mechanistic ideas of conditioning of the orthodox branch of that school of animal study and conceiving of painful impulses induced as simply being one factor in a gestalt or configuration of stimuli which includes the entire situation of the animal to which it reacts rather than to any particular sensory modality.

The animal may react as did the dogs described by Pavlov or by James in Liddell's laboratory with the manifestations of pain and desire to escape. It is further understandable when escape became impossible, when the leg was tied, to associate pain and try to bite away the harness and escape from the room, from the situation. In its manifestation the behavior of the animal was also poor in the sense that the animal reacted not only to pain but to the experiment, the experimental room. The animal showed in its general behavior a memory of its experiences which conditioned all further adjustments.

Herthia I believe it was in 1914 showed if a sensory stimulus, painful though it be, is associated with satis-

faction to the animal's needs that painful stimulus will be sought by it and apparently enjoyed by the animal. As near as we could judge Herthia did it by feeding the animal after painfully mounting the legs.

In our own laboratory we have perhaps paralleled the condition more closely by teaching the animal to go to the switch and press it to give itself a shock as the only condition by which it can be fed. So the animal even endures that because the meaning of that painful stimulus leads to the satisfaction of its own needs.

The relationship to the experiment has also been stressed by Liddell. Perhaps we have not sufficiently recognized how deep and how important that can be.

In psychological history there is a bit of anecdote which we ought to recall every once in a while. Back in 1911 there was a book written by someone about the wonder horse, Clever Hans. Clever Hans outdid in his laboratory demonstrations anything that Liddell's pigs or goats or my cats did. Clever Hans could extract cube roots. Clever Hans could read quotations from the Bible. Clever Hans, when you sounded a chord of A, F, or D, F, A, C would wag its head in negation and when you corrected it to a perfect minor chord D, F, A, would nod its head in assent.

A committee was appointed consisting of zoologists and psychologists to disclose the facts. The committee being wise in ways of horse trainers decided that if it could eliminate the trainer of the horse so that signals given by the trainer could not be appreciated by the horse and the horse still went through its performance, there was something in attributing mental capacity to that particular horse. They did exactly that and the horse continued to spell out various sentences, replying quite accurately to problems set before it by tapping one foot to indicate a certain letter, another foot a certain number of times, and get another letter and thus spell out the sentence. Funks was not satisfied. The committee decided there must be still another control. If a question was set for that horse and the questioner himself did not know the answer then the entire performance failed. The horse just kept tapping its foot until the questioner gave it a signal to stop. Funks then discovered that the horse of course had not been solving any of these problems. What he had been doing was responding to quite unconscious signals given by the questioner.

If he were asked to extract the cube root of 64, shall we say, the horse would tap its foot four times. What the questioner had unconsciously done would be to nod the head at the four and then with an unconscious terminal movement of the head had given the horse the signal to stop.

In our own laboratory we do not try to eliminate the influence of the experimenter as part of the total situation to which the animal reacts.

The clinical significance of these studies is apparent, namely that one can produce apparent delight in pain. That has been shown by Shlitskaya who conditioned babies to welcome needle pricks because that was the only condition under which they could be fed. Wolff

and Goodell have shown that attitude in that past experience of the subject influences its perception of pain a great deal. If a patient has been led to believe that he received a dose of aspirin he knows from past experience that that dose of aspirin should decrease his pain sensitivity. His pain threshold drops 30 per cent even though the drug administered was a placebo. On the other hand, if he was given aspirin his pain sensitivity will not go up if he believes it to be a placebo. If he is not quite sure, the pain sensitivity falls somewhere in between.

All the other speakers this evening have shown how the attitude of the subject to a situation determines in great part this reaction to stimuli which we call pain only in the abstract and that this cannot be defined in purely neurological terms. I was interested to hear, in discussing this question only last night with Rioch, that he was led to define pain as a social rather than a purely neurological phenomenon.

I have perhaps one point of difference with Dr. Liddell and that is his interpretation of the type of reaction from the psychosomatic standpoint shown by his dogs. I wonder whether one can say that the dog showed a loss of cortical activity simply because he responded to a painful stimulus, not in the accustomed way but by attempting to escape from the harness that contained him. I should think that this response could be only an adaptive reaction to the total experience.

SUMMARY FOR DISCUSSION

GREGORY ZILBOORG, M.D.

The discussion has touched upon such a variety of divergent matters that a complete summary is well nigh impossible. I will therefore pick out only those two or three trends which crystallized themselves in the course of this discussion, trends that pertain particularly to the subject of psychosomatic medicine or the subject of the relationship of psychological and somatic reactions within the frame of the total personality.

What is most impressive is the keynote which was sounded in the summary made by Dr. Binger when he spoke of the differentiation between the perception of pain and the reaction to pain, and the keynote which was sounded by Dr. Masserman in his concluding remarks that pain could be defined only in the abstract and not in neurological terms. I think with these two particular sets of remarks we might find a more or less logical and scientific pathway to solve or to throw light on some of the problems that interest us.

There is a serious question, I think, in the mind of a scientifically oriented individual whether what we call a perception of pain is not in itself already a reaction, and I think it is perhaps not quite correct to consider a motor reaction to pain a reaction to pain without this qualification. The motor reaction to pain is only a further elaboration of a reaction to a certain type of stimulus which first appears as a perceptual subjective reaction. That is the first point. The second, which

is an extremely important point made by Dr. Weiss, seems to bring into focus the actual problems which we are facing. Dr. Weiss spoke of the necessity of understanding the content of emotion and of not speaking of emotional reactions producing these or those cardiac complications without analyzing the contents of those emotions, in other words, the ideal content of these emotions.

Perhaps we will go back to the beginning and say that the perception of pain as such, which to the experimenter appears an objective observation of a subjective reaction, this very perception already has a psychological content. That psychological content cannot be exhausted by mere observation of the external reactions or the subjective statement. It can be exhausted only if the unconscious objective reactions are at the same time taken into consideration. To what extent this is true has been demonstrated by the facts mentioned but has not, I think, been sufficiently discussed.

In the first paper by Dr. Chapman there was a very interesting reference made to the fact that the time between the subjective perception of pain and the motor reaction to pain seems to be smaller in the psychoneurotic groups so-called than in the group of people suffering from hypochondriasis.

This is an interesting phenomenon. Is it not possible, not by way of hypothesis, but by way of our clinical knowledge, to postulate in advance that this is psychologically quite correct? It is psychologically inevitable that it should be so, because any stimulus from outside is a part of reality, no matter how strong the impact of that reality is on the subject. Inasmuch as it is a part of reality the reaction to that reality ought to be greatest in the individuals who are least withdrawn from reality or least withdrawn from concrete stimuli.

In an hypochondriasis, the nearest approach to schizophrenic withdrawal from reality, there naturally ought to be a retarded motor response to pain. It is inevitable. These types are much more retentive, to use the psychoanalytical terminology, in their characterological makeup.

The question of cardiac reactions has also been raised and while it is not exactly a part of this summary to which I have been assigned I should like to share with you this experience: I have had in analysis for the past year and one-half an individual who had three severe cardiac attacks, one of which required hospitalization for six months. The man never goes out without nitroglycerin. He had two or three such attacks on the couch. He has not had an attack

for a period of eight months. The mobilization of his emotions seems, in this particular case, to have prevented him from developing further attacks. Yet the statement made by Dr. Weiss is undoubtedly correct and very important, that certain types of emotional reactions will produce an attack with this proviso, which Dr. Weiss himself reported, namely that after the patient whom he described developed a coronary occlusion she became less agitated, very docile and, psychologically as it were, more comfortable. This is particularly characteristic in individuals in whom the unconscious aggression is so immense that it becomes discharged through a self-injury or through an organic accident, which is used psychologically as a self-injury, and naturally there is a pacification of the total characterization of the individual. It is a form of partial suicide, if you wish.

One word about animal experimentation. I have been a witness and a participant of the very early psychological experiments done by Bechterevel. He was the first to begin experiments on human beings instead of animals. I think that Dr. Liddell was perfectly right in leaving the discussion of pain to the psychiatrist. He did not use the word "pain." Here is the crux of the problem. Pain, whatever biological interpretation one gives it, will inevitably lead to teleological conceptions; what purpose does it serve? Here we are in the field of philosophy, and perhaps the most recondite part of philosophy.

On the other hand, pain as subjectively perceived has a psychological content and that content is highly personal and individual, depending upon the particular personality makeup. Therefore I cannot help but join with the appeal made by Dr. Weiss that the personality studies as a part of the clinical investigation preliminary to diagnosis and therapy are probably the most important part of the present day method of clinical investigation and therapeutic endeavor.

Dr. Dunbar has said that the total personality reaction in any given situation including the most severe organic dysfunctions probably represents the primary factor in our understanding of the given clinical situation. If we neglect this factor we are in the field of a straight pragmatic, empirical and neurological approach to the problem. We are then satisfied subjectively with the fact that we are very objective but we will inevitably be profoundly dissatisfied because medicine in practice will lose its very foundation, namely, the contact with the human being which is discovered in the psychological way only.

REVIEWS OF PERIODICAL LITERATURE

ANDERSON, CHARLES: *Chronic head cases.* Lancet, 243: 1, 1942.

One hundred and fifty Service cases diagnosed as head injury were studied. Sixty-seven of these were psychoneurotic. Reactions of the personality as a whole should be carefully assessed since neurological signs are uncommon after head injury. Cases suspected of neurosis or malingering may have developed organic sequelae after slight head injury. The patient who denies his illness may develop neurotic reactions superimposed on organic symptoms.

R. P.

COLEMAN, JULES V.: *Depression masked as malnutrition.* Psychiat. Quart., 18: 233, 1944.

There is a group of cases with depressive personalities in which rapid loss of weight, simulating an organic wasting disease, occupies the foreground of clinical interest. Psychological mechanisms of the weight loss are given.

R. P.

DUNBAR, FLANDERS: *Medical aspects of accidents and mistakes in the industrial army and in the armed forces.* War Med., 4: 161, 1943.

This paper brings into focus the importance of the accident habit, which seems to include also a mistake habit, in selectees or in members of the industrial army and, second, to abstract from recent studies of the accident habit points that might have a bearing on the advisability either of excluding accident-prone persons from the Army and from industry or of placing them in such a way that their major difficulties would not be activated. Since the major sphere of difficulty of such persons seems to lie in adjustment to authority, patients suffering from coronary occlusion, who have a similar difficulty with authority but a different means of dealing with it, have been used for contrast. It is suggested that persons in charge of selective service or industrial activity might be aware of persons of this type and that these persons be given special attention in placement and treatment. It should be noted that with adequate treatment many persons with the accident habit recover from this habit as they do from more familiar types of illness.

R. P.

MICHAELSON, I. C.: *Ocular manifestations of neuroses in soldiers.* Brit. Med. J., October 30, 1943.

In this report mention is made of (a) the two chief psychical conditions—hysteria and chronic anxiety state—which cause a variety of ocular symptoms; and (b) the differentiation of these functional symptoms from those produced by organic disease.

R. P.

QUINN, ROBERT: *Hyperventilation and hyperventilation syndrome.* U. S. Naval Bul., 41: 769, 1943.

It is now known that the symptoms of a person suffering from anxiety, fear or neurosis are as real as those due to an organic disease. Some of the physiological and biochemical changes accompanying hyperventilation are known, but the mechanisms responsible for production of symptoms are complicated and controversial. Physiological and chemical changes are described. Treatment includes both psychiatric and symptomatic measures.

R. P.

ROLLIN, HENRY R.: *Pediculosis capitis and intelligence in W.A.A.F. recruits.* Brit. Med. J., April 17, 1943.

On initial F.F.I. examination, 312 W.A.A.F. recruits found to be infested with pediculosis capitis were treated and then given the Stephenson G.V.K. intelligence tests. The scores after conversion into percentiles were compared with the percentile scores of 312 unselected who were uninfested. There was marked difference in the scores of the two groups, the lowest scores in all three tests being found in the infested group, suggesting that pediculosis capitis is more prevalent among the less intelligent recruits.

R. P.

SCOTT, P. D., AND MALLINSON, P.: *Hysterical sequelae of injuries.* Brit. Med. J., April 1, 1944.

A group of cases is described in which physical symptoms and signs of a distinctive character, hysterically produced or maintained, served greatly to prolong convalescence in six Naval ratings who had received injuries to the hand or arm. The importance of the early recognition of such psychogenic complications is shown by the rapid response to psychological treatment of a relatively simple kind. Diagnostic criteria are discussed under three headings.

R. P.

TEICHER, JOSEPH D.: *"Blind Staggers."* U. S. Naval Med. Bul., 42: 892, 1944.

This article describes "Blind Staggers," a symptom which occurs frequently in the Navy, particularly among Negroes. Duration is usually from two to ten minutes; precipitating causes, overheating, over-exertion, exposure to sunlight and excitement. Physical and neurologic examinations are negative. An outline of treatment is suggested.

R. P.

EDWARDS, HAROLD: *Dyspepsia: An investigation.* Brit. Med. J., Nov. 20, 1943.

A study was made at a military hospital of 356 cases by a "gastric board" consisting of officers in

charge of the medical and surgical divisions, a medical specialist, radiologist, pathologist, psychiatrist and general duty officer. Of 356 investigated, 139 were diagnosed as having an ulcer. The remaining 217 cases belonged to the non-ulcer group. Thirty-seven had evidence of a gastric or duodenal lesion, 180 labeled "functional dyspepsia." Results of the statistical returns are given.

R. P.

GILL, A. M. ET AL: *Differential diagnosis of dyspepsia*. Lancet, 242: 727, 1942.

ROOK, A. F.: *Peptic ulcer. Prognosis in Royal Air Force patients*. Lancet, 244: 733, 1943.

Digestive disorder in the R.A.F. is higher among the aircrew than in ground personnel and the rate of invalidity has been about 17% of those discharged for all diseases. The higher the rank of the patient, the more likely was he to carry on his duties.

R. P.

SMELLIE, J. M.: *Gastric disorders in the Army*. Lancet, 242: 322, 1942.

BUTLER, A. GRAHAM: *The treatment of "The Effort Syndrome"*. M. J. Australia, May 31, 1941.

HYMAN, ALBERT S.: *Cardiovascular disease in the Tropics*. U. S. Naval Med. Bul., 42: 545, 1944.

A report is given of cardiovascular reactions of a large group of Navy personnel on combat duty in the South Pacific. In general the various groups of cardiac cases have not differed from similar patients seen at home. Neurocirculatory asthenia was responsible for the largest number of cases. Exposure to heat and humidity has aggravated the symptoms of this disease.

R. P.

COHEN, ROBERT R.: *Factors in adjustment to army life. A plan for preventive psychiatry*. War Med., 5: 83, 1944.

Because it was felt that prophylactic measures directed at the mental hygiene of the new trainee could prevent superficial maladjustment by dissipating mental discontent, a program for preventive psychiatry was evolved at the Ordnance Replacement Training Center, Aberdeen Proving Ground, Md. When comparisons showed that experimental companies were superior to control companies, talks were given routinely to all new trainees. The actual talks with illustrations used are given.

R. P.

CUNNINGHAM, JAMES M.: *The serviceman returns*. Bul. Mass. Soc. Ment. Hyg., February, 1944.

A description of the problems encountered by the discharged soldier is given and an outline of the present machinery for the rehabilitation of these cases is presented.

R. P.

EBAUGH, FRANKLIN G.: *Misfits in the military service*. Dis. Nerv. System, 4: 1943.

FREEDMAN, HARRY L.: *Mental-hygiene first aid for pre-combat casualties*. Mental Hygiene, April, 1944.

KARDINER, A.: *Forensic issues in the neuroses of war*. Am. J. Psychiat., 99: 654, 1943.

The major forensic issues are created by the traumatic neuroses. Diagnostic criteria are definite and precise. The traumatic syndrome consists of sensory-motor disturbances, autonomic disturbances, syncopal phenomena, or defensive rituals, plus a typical dream life, alterations in personality, typical inhibitions and a typical Rorschach picture. Compensation should be reserved for cases who prove therapeutic failures after two years of constant application.

R. P.

KOTLER, JULIA: *Contribution of a Red Cross Unit to the rehabilitation of a military patient*. The Family, 25: 102, 1944.

SCHREIBER, JULIUS: *Morale aspects of military mental hygiene*. Dis. Nerv. System, 4: 3, 1943.

BARACH, ALVAN L. ET AL: *Impairment of emotional control as a test of altitude anoxia*. J. Aviat. Med., 14: 62, 1943.

Impairment in emotional control produced by exposure to a 15,000 feet altitude is a more reliable test of the potentially unsafe flier than more quantitative physiological and psychometric tests. Although observation of disturbances in affective behavior is qualitative, it has the advantage of contributing significant information concerning a man who may be exposed to moderate anoxia in flying.

Author's Abstract.

DOUGLAS-WILSON, IAN: *Somatic manifestations of psychoneurosis*. Brit. Med. J., March 25, 1944.

The presenting symptoms in 202 cases of psychoneurosis reporting with somatic manifestations have been analysed. Predisposition to mental disorder was found in nearly all cases.

Important factors determining the localization of symptoms were found to be family or previous personal history of organic disease in the system involved and existing trivial disorders.

Cardiac symptoms had been suggested to some by long confinement to be or by warnings to avoid exertion. In others, energetic Service life had directed attention to the heart. In several, more than one extrinsic factor has induced the condition. Associated phobias were sometimes present.

Chest symptoms were commonly associated with fear of tuberculosis, of which there was a family history in half the cases. Gross dyspnoea was the rule. Headache was seldom of a type that suggested organic disease. The patient was often preoccupied with the possibility of brain tumor or insanity, and

where the condition followed head injury—with the possibility of further trauma. Abdominal symptoms, except when due to hysteria, tended to conform to one of three groups of symptoms. In some there was definite physiological disturbance.

R. P.

GARMANY, GERALD: *Reactive anxiety and its treatment*. Lancet, 246: 7, 1944.

HEATH, R. G., AND POWDERMAKER, F.: *The use of ergotamine tartrate as a remedy for "Battle Reaction."* J.A.M.A., 125: 111, 1944.

The term battle reaction is suggested in place of war neurosis as being more accurate. In this category are grouped cases in which the previous adjustment had been apparently normal. The reaction is regarded primarily as a physiologic disturbance, the result of inordinate fear causing pronounced nervous system overactivity. A cycle is established as a result of this autonomic imbalance. Physiologic changes primarily and, to a lesser degree, superficial psychologic mechanisms lower the patient's threshold to fear, causing the reaction to intensify and persist.

Autonomic drugs, it was felt, might more directly break up this cycle than sedatives. Ergotamine, a sympatholytic drug, together with the special environment of the Rest Center, seems superior to parasympathomimetic agents in the same environment. It has been given to twenty patients with "battle reaction" with what seemed to be convincing results. Many uncontrollable factors in the Rest Centers make rigid evaluation of any one phase of treatment difficult. It is more important to get the man well by all the means available than to set up a rigidly controlled experiment.

Ergotamine tartrate was ineffective in the treatment of ordinary psychoneurosis. It is hoped that physicians working with similar types of patients will continue the experimentation.

R. P.

KLINGMAN, W. O.: *Psychoneuroses incidental to pre-flight and primary flight pilot training*. Am. J. Psychiat., 100: 217, 1943.

MALLINSON, W. P.: *Evaluation of hysterical symptoms in service patients*. Brit. Med. J., May 10, 1941.

NUSSBAUM, KURT: *Correlation of some psychiatric problems encountered at Induction Centers and in Army Hospitals*. Psychiat. Quart., 18: 225, 1944.

The article considers the importance of certain criteria in the make-up of candidates for military service. It suggests that in patients with psychosomatic disorders (cases given) psychiatric work-ups, including social histories, be done.

R. P.

RAINES, GEORGE N., AND KOLB, LAWRENCE C.: *Combat fatigue and war neurosis*. U. S. Naval Med. Bul., 41: 923, 1943; 41: 1299, 1944.

The first section of the article presents a discussion of the literature, symptomatology, diagnosis and etiology of "combat fatigue," with two typical cases of this disability. The second part contains further case illustrations and its differential diagnosis from other common neuropsychiatric disorders.

R. P.

RICHARDS, THOMAS W.: *The appraisal of naval psychiatric casualties by the Rorschach method*. U. S. Naval Med. Bul., 41: 788, 1943.

This report deals with the use of the Rorschach test in 14 cases selected from a larger group examined at the Naval Hospital and the Naval Training Station at San Diego. These were psychiatric casualties apparently precipitated by combat conditions. Only after the Rorschach interpretation was written was the man's health record examined to learn the history and diagnosis. Rorschach summaries and case histories are presented. Agreement is great and differences seem to lend mutual confirmation.

R. P.

ROME, HOWARD P.: *The role of sedation in military medicine*. U. S. Naval Med. Bul., 42: 525, 1944.

Emotional reactions to war are grouped in the following categories: Simple fatigue and mild fear states; combat fatigue states; psychoneurotic reaction types; psychotic reaction types. Tables describing the standard drugs used for sedation in these four groups are given. It is felt that this therapy is effective in the early rehabilitation of the psychosomatic casualties of war.

R. P.

SCHWAB, R. S., FINESINGER, J. E., AND BRAZIER, M. A. B.: *Psychoneuroses precipitated by combat*. U. S. Naval Med. Bul., 42: 535, 1944.

The purpose of this study was to ascertain whether patients with persistent psychoneurotic symptoms which were precipitated in combat, had a past history of similar or other psychoneurotic complaints. In addition, an attempt was made to study various physiologic functions under laboratory conditions of rest and stimulus, in order to compare the results with those obtained from psychoneurotic patients who had not been exposed to combat experience, and from a series of normal control subjects.

Three groups of naval personnel were examined in this study; 26 cases of combat neurosis, 25 cases of neurosis in individuals not exposed to combat, and 23 control cases exposed to combat without development of neuroses. This study revealed the following results:

1. A past history of psychoneurotic symptoms was found in approximately 90 percent of both

- groups with neurosis, but in only 17 percent of the control series.
2. The most striking symptoms in the combat neurosis group were gastro-intestinal disturbances (85%), severe reaction to noise, presence of disturbing nightmares and headaches. The reason for their admission to the hospital on the other hand, in over 90 percent of the cases, was their inability to do their work.
 3. The most common diagnosis was anxiety neurosis which accounted for 80 percent of the combat neurosis group.
 4. The electroencephalograms of the combat neurosis group were seen to have some of the characteristics which, in another study, have been found to differentiate the EEG's of patients with psychoneuroses from those of normals.
 5. An auditory stimulus was found to have more effect on the ventilation heart rate and, in particular, on the muscle tension, of the group of non-combat neuroses than on those with combat neuroses, the control group being least affected by the stimulus.

R. P.

SKOTTOWE, IAN: *Psychological medicine, current methods of treatment*. Lancet, **246**: 329, 1944.

STEELE, EDSON H.: *Psychiatric casualties*. U. S. Naval Med. Bul., **42**: 1089, 1944.

Patients whose disabling symptoms were established as psychogenic in origin comprised approximately 5 percent of the total admissions to this hospital. Experience here indicates that so-called malingering, as well as all psychiatric symptoms, is an attempt of a person to meet a situation, and under the circumstances, his best attempt. There is no sharp line of differentiation between a psychosis and a psychoneurosis, nor between a psychoneurosis and malingering. The reason for the symptoms or complaints as well as the goal is the same in all three types of reaction.

In all three types of reaction the presenting symptoms are useful and necessary so long as the person maintains the same opinion of himself and the same attitude toward his environment (the threatening or tedious situation). His symptoms are a necessary refuge. To remove the symptoms, thereby depriving him of his refuge, is to precipitate a more serious situation and force him into a more pronounced disorder. The mental attitude combined with the situation results in the symptoms. Punishment, ridicule, or humiliation results only in increasing symptoms or at best in delaying them for a short time.

Eventually more can be accomplished in preventive psychiatry by preparing officers and men for the

changes to expect in themselves during actual combat, and to aid in developing a more stabilizing attitude. Possibly psychiatric counsel may be made available in combat areas where symptoms are apt to develop, an arrangement similar to that established by the flight surgeon with aviation personnel. Of help also in preventing maladjustment and psychiatric disabilities is the efficient placement of personnel in jobs for which they have special aptitude or training.

R. P.

STEINBERG, DAVID L., AND WITTMAN, MARY P.: *Etiologic factors in the adjustment of men in the armed forces*. War Med., **4**: 129, 1943.

This paper presents the results of a differential study of sociologic, developmental, personality and adjustment characteristics of:

- (1) 158 men attached to the Medical Corps unit at Chanute Field;
- (2) 22 patients in the psychiatric unit of the station hospital at Chanute Field;
- (3) 87 patients in the Veterans unit at the Elgin State Hospital discharged from the Army within the past year and a half as mentally ill.

R. P.

SYMONDS, C. P.: *The human response to flying stress*. I. *Neurosis in flying personnel*. Brit. Med. J., Dec. 4, 1943.

Data on 2000 cases whose neuroses have arisen from flying duties are presented. Anxiety states occurred in 79%, depressive states in 9%, hysteria in 13%. Mixed forms were frequent. There is a discussion of fear as an element of flying stress.

R. P.

Ibid: II. *The foundations of confidence*. Brit. Med. J., Dec. 11, 1943.

SYMONDS, C. P.: *Anxiety neurosis in combatants*. Lancet, **245**: 785, 1943.

TORRIE, ALFRED, AND ABERD, M. B.: *Psychosomatic casualties in the Middle East*. Lancet, **246**: 139, 1944.

A study is made of 2500 psychosomatic casualties in the Middle East. The main symptoms in order of frequency were headache, anxiety, tremor, disturbed sleep, depression, physical factors, lack of concentration, visceral symptoms, dizziness, hypersensitivity, lassitude, cardiovascular symptoms, amnesia, paresis, etc. Cases were divided into three groups for treatment: No psychiatric disability; psychiatric disability in certain environments; psychiatric disability requiring treatment.

R. P.

BOOK REVIEWS

ALVAREZ, WALTER C.: *Nervousness, Indigestion and Pain*. New York, Paul B. Hoeber, Inc., 1943, 475 pp. \$5.00.

This volume, a successor to Alvarez's "Nervous Indigestion," is hard to categorize. It covers many of the problems which patients with nervous indigestion are apt to present. It discusses gastroenterology, psychiatry, the art of examining and handling patients, menopause, insomnia, migraine, etc. The author is the famous consultant in gastroenterology of the Mayo Clinic; apparently a fine clinician, enormously experienced, wise, compassionate, and highly intelligent. His presentation of neurotic problems is that of the "common sense practitioner"; which is to say, it is simple, direct, superficial, apt to be useful in his hands and in those possessing his qualities; apt to be of very much less value when used by physicians less endowed. He uses the technics of careful scrutiny of the physical signs and symptoms, meticulous examinations, reassurance, persuasion, various types of relaxation and recreational advice, and mild emotional catharsis. These are all methods which can be adopted and adapted by the general practitioner, but reassurance, in particular, is apt to be more effective when backed by the prestige of the great consultant and the Mayo Clinic than when used by the run of the town practitioner.

There is little mention of the teachings of the various schools of depth psychology and psychiatry. This is a serious omission, but perhaps partly justified by the fact that the group for whom the book was written—the general practitioners—are, as a rule, not well-informed in this regard and might do more harm than good with blundering attempts at pseudo-analytic interviews. Yet the book is couched in terms which make one question the author's insight in this field.

Some of the conceptions of psychotherapy are rather startling. I quote.—"Thus, years ago I saw a nervous man with a lot of strange symptoms for which no one could find a cause. He was unable to work steadily at any job, and eventually he retired on a small pension. I told him I felt that back somewhere in his family tree there must be insanity, and that he had inherited a bit of the curse, but he didn't know much about his family and so I couldn't prove my point. A few years later he dropped in just to tell me that I must have been right because some time after he returned home his sister and later a nephew went violently insane." The following are sub-headings, in order of appearance, of a chapter captioned "Types of Neurotic Persons": "The Person Whose Nerves are Playing Tricks on Him"; "The 'Thermostats' in the Hypothalamus"; "Why the 'Thermostats' Get Out of Control"; "An Explanation for the Nervous Storms"; "The Advantages of Using

the Concept of Nervous Storms"; "The Person 'Caught in a Trap'"; "The Person with Greatly Exaggerated Knee Jerks"; "The Fussbudget"; "The Woman who Revels in Medical Treatment"; "The Person who has Fled into Illness"; "The Person Who Gets Very Nervous After Meals"; "The Person Who has Abdominal Distress after Defecation"; "The Person with Multiple Sphincter Spasms"; "The Dominating Type of Woman who is Unhappy"; "The Woman who is Spoiled"; "The Woman who Hugs her Grief"; "The Woman with an Avenging Conscience." In brief, the approach to neurotic problems is that of an excellent internist, experienced and sensitive in handling neurotic patients, apparently largely self-tutored in psychiatry, who has carried superficial psychiatry to about as good a development as it can attain.

The value of the material is, however, great. The book is an important contribution insofar as the emotional factors in gastroenterologic problems are constantly considered, constantly stressed, and the relation made easy for the general physician to grasp through the use of simple analogy and parable.

The book contributes little that is new in the field of psychosomatic medicine. For those primarily interested in psychiatry, there is much useful material on gastroenterologic symptoms and their appraisal. For those primarily interested in internal medicine, there is much useful material on diagnosis and treatment scattered throughout the book.

Unfortunately, the rambling, conversational style leads to much repetition, and the material is not carefully organized. Many gems of clinical experience are hidden in dark corners. The discussions are punctuated—often, it seems, interrupted—by the numerous anecdotes. The book would profit by more careful organization and much condensation.

"Nervousness, Indigestion, and Pain" will undoubtedly exert much influence on the thinking of many medical practitioners. It is to be hoped that they will be stimulated to read some of the books written from the viewpoint of the modern psychotherapist.

MACK LIPKIN

PAGE, IRVINE HEINLY: *Hypertension; A Manual for Patients with High Blood Pressure*. Springfield, Illinois, C. C. Thomas, 1943, 91 pp. \$1.50.

This slender volume on hypertension is characterized by "Time" as an "extraordinarily readable book." So it is. Many salient clinical facts are packed into it. The fact that hypertension "is the most important single cause of disability and death," and therefore constitutes "a problem of the greatest social and economic importance" makes this book worthy of careful scrutiny.

The author's purpose is to tell the person suffering from hypertension what his disease is, what can be done to relieve it, and how he can live more comfortably. The procedures of examination, the pathology, physiology and clinical features of the disease are discussed and there is a section devoted to the management of hypertension. The physiological and clinical aspects of the disease are presented in a condensed but effective manner. However, when the author attempts to handle the human side of the problem, he seems to be on more uncertain ground and at times falters badly.

In the opinion of the reviewer, the treatment of the psychic aspect of the problem of hypertension is inadequate and the counsel offered the hypertensive on how to manage his emotional distress is frequently sprinkled with insoluble contradictions.

The author seeks to give the patient an intellectual grasp of the phenomena of the disease. His theme seems to be that a hypertensive can lessen his fear, dull his emotional torrent, regulate his activity and live more comfortably, by acquiring an intellectual understanding of the disease process and by exercising a trained conscious control over his emotional turmoil.

The author's emphasis on an intellectual mastery of the facts of the disease is of questionable value to a patient suffering hypertension. He can never know the disease in the way a physician knows it. He cannot be expected to achieve the objectivity or emotional detachment of the trained scientist. While there is some virtue in acquiring an intellectual understanding of the origin of symptoms and in a conscious reorganization of attitudes towards them, there are obvious hazards in this type of psychological re-education of the patient. It appears to the reviewer that the layman reading this book on hypertension may be drawn into an excessive and morbid concern with the internal affairs of his body. In predisposed patients, it would seem possible that this type of instruction might encourage hypochondriacal preoccupation. At times the author seems unwittingly to frighten the patient. He takes him on a Cook's tour and shows him dramatically all the ways in which the processes of hypertension may insidiously destroy his body and shorten his life. After that, he attempts to comfort and reassure the patient.

In attempting to deal with the emotional attitudes of the patient suffering from hypertension, the author seems frequently to contradict himself. For example, the author says "It is inevitable that you should feel some apprehension of this sphygmomanometer, when within a minute or two your whole future may be altered by its finding." Such a comment seems to place the power of life and death in the blood pressure reading. Yet immediately thereafter, the author changes his tune and says reassuringly, "although the height of the blood pressure is important it is one of the many factors involved in the disease. Often it is relatively unimportant. It is not possible to de-

termine merely from the blood pressure reading what the outlook for the patient is."

Again in another place, he says "There is no reason for him (the hypertensive) to lead a life of denials avoiding this and avoiding that until life becomes merely a series of can'ts." But the author then proceeds to instruct the patient with a series of can'ts: "You should not run up a flight of stairs, you should not get excessively tired. You should avoid competitive sports. You should avoid arguments and worry. . . . In short, you must live a life of moderation." Further on he says the hypertensive must make "a life of cultivated serenity founded on the technique of cooperation with the inevitable."

In the next paragraph he admits that persons who have hypertension are so extreme in their views that they "want full activity, full health or nothing." He admits that the hypertensive is an uncompromising individual. He tells the hypertensive he must cultivate equanimity, and in the same breath admits that they are immature, aggressive, easily angered, rebellious and have emotional storms. In other words he tells the hypertensive that he must not be the kind of person he is. It is questionable how far such conscious preachments would have any effect on the patient's management of his emotional life.

In general the author advocates a conscious control and reorganization of the life pattern in order to minimize emotional distress and slow the pace of hypertensive deterioration.

The author's comment on the importance of psychotherapy is brief and relatively superficial. He pays lip service to the value of psychoanalysis and tends generally to shy away from any of the intensive forms of psychological treatment. Interestingly enough, one of his objections to psychoanalysis is stated in terms which imply that the patient can avoid emotional storms by avoiding psychoanalysis. In this section, too, the author's attitudes reflect certain unresolved contradictions. "For some patients some form of psychiatric guidance may be helpful. Many practitioners are quite as able to give this as psychiatrists but have neither the time, inclination nor psychiatric insight." If the practitioner has neither the inclination nor the psychiatric insight, it would be difficult to imagine how he could be helpful in guiding his patient.

NATHAN W. ACKERMAN

Contemporary Psychopathology, A Source Book.
Edited by Silvan S. Tomkins. Cambridge, Harvard University Press, 1943, 595 pp. \$5.00.

It is a difficult task to give a representative survey of contemporary psychopathology. It is even more difficult to attempt this by selecting and reprinting in full forty-five original papers by fifty-four different contributors. Such a survey could only be accomplished in the highly satisfactory degree in which it has been done, by some compromise; for instance, it was felt that a more complete coverage of schizo-

phrenia is of more value than an attempted coverage of all of the psychoses. The chosen papers are concerned with the dynamic understanding of psychopathology and, in this respect, they strikingly illustrate the progress of psychological science since the publication of W. S. Taylor's "Readings in Abnormal Psychology and Mental Hygiene". In his introduction, Henry A. Murray states that this "is not a textbook in itself, but the auxiliary of a textbook," because the attempt at comprehensiveness has been abandoned. The chapter on "Psychoneuroses and Psychosomatic Medicine" contains papers by Alexander, Rubin, and Bowman, Wolf and Wolff, Dunn, Kardiner, French, and Saul.

MARTIN GROTHAAN

ACKERMAN, LLOYD: *Health and Hygiene, A Comprehensive Study of Disease Prevention and Health Promotion XII*. Lancaster, The Jacques Cattell Press, 1943, 895 pp. \$5.00.

This book is written for the general public, and written well. It gives valuable and concise information on facts, actual problems, and many psychosomatic interrelationships in the fields and "between fields" of public health, personal hygiene, nutrition, mental hygiene, eugenics, and industrial hygiene. The subject of the book has been drawn from about three hundred scientific journals; the bibliographic references are listed carefully.

It was the author's purpose (page 689) to show "that the particular kinds of concepts and practices that are accepted and utilized by the individual are determined by the nature of his bodily structures and processes, by the nature of the internal and external stimuli that act upon him, and especially by his social environment and attitudinal traits." He emphasizes "that attitudes and traits are established by emotional conditioning and by integrating, differentiating, and repeating numerous experiences"; and "that attitudes, especially social attitudes, often are adopted ready-made from others."

A few comments on some chapters of the book may be added. The chapter on "The Hygiene of Mating" is especially well presented. The author's approach is frank and very skillful. In the chapter on "The Hygiene of the Emotions and the Intellect," the author deals in a clear and modern manner of presentation with anatomic and physiologic basic aspects of nervous activity; types of response to nervous activity; attitudes, behavior patterns and personality traits; frustrations, conflicts and modes of adjustment; kinds and causes of mental diseases, disorders and deficiencies; prevention of mental diseases and disorders; and the promotion of mental health. For future editions, it may also be suggested to add a chapter on hospitals and health centers in their relation to health and hygiene within a community.

Professor Ackerman's very readable book can be recommended to many as a source of worthwhile in-

formation. The students at liberal arts colleges and other schools should read it. In particular, premedical and medical students will greatly benefit from studying it carefully. The book with its penetrating survey of recent literature makes it also interesting reading for older disciples of Aesculapius.

A. K. GEORGE

DUBLIN, LOUIS I.: *A Family of Thirty Million: The Story of the Metropolitan Life Insurance Company*. New York, The Metropolitan Life Insurance Company, 1943, 496 pp.

The late Carl Russell Fish of the University of Wisconsin used to exclaim that he enjoyed nothing better than "a nice big juicy fact." This book would have delighted him; it abounds in facts. It is the history of the Metropolitan Life Insurance Company from 1868 to the present. The author is the Company's distinguished statistician and a third vice-president.

There is considerable of medical interest in this book. Not only has there been a close correlation between the development of life insurance as a business and the progress of medicine as reflected in the public health, but the Metropolitan especially (in part because of its traditional emphasis upon industrial insurance) had actively promoted and supported research in industrial medicine, accident prevention, public health nursing, and health education through various media. It was in 1909, for example, that the Company first joined hands with Lillian D. Wald's Henry Street Nurses in giving home nursing care to sick policy holders. Now some 819 public health nursing agencies and 571 salaried nurses in 7,728 communities of the United States and Canada are available to the Metropolitan policy holders.

There is little to indicate to what extent psychiatry enters into the medical and public health program of the Metropolitan. The reviewer is left wondering, for example, whether mental illnesses enter into morbidity statistics, whether psychosomatic concepts are considered in industrial health and insurance programs, and what are the functions of the psychiatrist who was appointed to the Home Office staff in 1922, but who receives no mention beyond that. It would seem that recent trends in industrial psychiatry, the subject of articles by Dunbar and others, would be of direct interest, especially to the Company's industrial health and hygiene service, an advisory service to employers.

The author's attitude toward social insurance is of significance, especially if it represents the official view of the Company. Group insurance and industrial insurance are planned, in general, for industrial workers, but not for workers in the lowest income groups; these, it is implied, are best provided for under social insurance. But the author goes even further in his implication that, even for the average wage earner, privately bought protective devices are complementary to the state social insurances. Millions

of relatively small industrial policies, it is stated, offer more than mere burial funds, and afford to the families of workers the security of at least several months' income beyond the death of the wage-earner. The suggestion remains, however, that there is still a considerable gap to be filled by state-sponsored social insurances, and that such measures as health insurance, unemployment insurance and old age benefits—at least for those in the lower income brackets—are not *per se* regarded as a threat to "private enterprise" as represented by a huge insurance company. This, of course, might be regarded as enlightened self-interest, since whatever improves the public health and security strengthens the industrial insurance company.

This readable book will interest many persons for various reasons. It explains many of the mysteries of insurance in lay terms. It will be a reference book for those interested in the social and economic history of our country in the past 75 years. Such assorted groups as doctors, statisticians, social workers, "trust busters," and specialists in medical economics may wish to read various of its paragraphs.

DOUGLASS W. ORR

GESELL, ARNOLD, AND ILG, FRANCES L.: *Infant and Child in the Culture of Today*. New York & London, Harper & Bros., 1943, 363 pp.

The outstanding feature of this book is the description of the child as a participant and object in the cultural setting of American democracy. Most of the space is devoted to a description of the child's behavior and development from birth to the age of approximately five years. This is done with understanding, warmth and knowledge, and will benefit the physician, parent and teacher alike. In the preface, it is stated: "This volume considers the deep significance of a democratic culture for the psychological welfare of infants and young children" (page X). The family is the "cultural workshop" and its goal is the free child, which means the happy and healthy child as well. The book closes with a consideration of the place of the child in the cultural setting of tomorrow: "The culture of tomorrow will be increasingly child-centered. There is no more powerful corrective for the aberrations of culture than folkways which pay respect to the individual. That respect must be based upon refinement of understanding. Every generation rediscovers and re-evaluates the meaning of infancy and childhood" (page 363).

MARTIN GROTHAAN

BAKWIN, RUTH M. AND HARRY: *Psychologic Care During Infancy and Childhood*. New York & London, D. Appleton-Century Co. Inc., 1943, 317 pp. \$3.50.

This is a textbook, written by two pediatricians and designed primarily for physicians in order to "interest and instruct them in the promotion of

optimal psychologic health in the child." The authors stress the fact that pediatric care is incomplete if it fails to include the "emotional, mental, and motor attributes" of infancy and childhood. Methods of history taking and clinical examination as well as special diagnostic methods are described in the early chapters, after which the book is about equally divided between what may be called normal maturation processes and psychosexual development, on the one hand, and neurotic symptoms, behavior disorders, and other special problems on the other.

The usual virtues and vices of the average textbook are found here. The book is well organized, well outlined, and clearly written, but it is eclectic, didactic, over-simplified and sometimes superficial. Finding so much in the field that is controversial, the authors attempt to remain within the realm of common sense and experience. This laudable purpose only leads them, however, to make one-sided selections from the specialized literature and often to stress but one of many aspects of a problem. This "common sense" effort leads the authors, for example, to lean rather too heavily upon John B. Watson in their discussion of fear and to ignore psychoanalytic psychology and all but the most diluted form of contemporary psychosomatic medicine. The treatment, even of such serious disturbances as phobias, stealing, fire-setting, and suicidal tendencies, consists almost entirely in "mental hygiene" advice to the child and its parents, and manipulation of the environment. The bibliography fails to list either Sigmund or Anna Freud, Melanie Klein, Helen Ross, Margaret Gerard, or English and Pearson (except for three articles of the latter), while Susan Isaacs is listed only under "sex education."

Despite these deficiencies from the psychiatric specialist's point of view, the book has considerable merit. Much can be done for many patients through superficial types of psychotherapy and by manipulation of the environment. The role of the parents and the significance of parental behavior and attitudes is stressed throughout, and these are often overlooked by the non-psychiatric physician. The discussions of psychosexual development and the neurotic and behavioral problems of childhood should promote objectivity and more sympathetic understanding. The point of view represented by the book and much of its content are still too much neglected in medical schools and at medical meetings. As a text it is certainly an advance over the numerous older books that never dealt with such considerations at all or, when they attempted to do so, were limited to descriptions of symptoms and the frustrating injunction to prescribe "psychotherapy."

DOUGLASS W. ORR

DAVISON, WILBUR C.: *The Compleat Pediatrician, Practical, Diagnostic, Therapeutic and Preventive Pediatrics, for the Use of Medical Students*,

Internes, General Practitioners and Pediatricians.
Duke University Press, Fourth Edition, 1943.

This pediatric dictionary contains a phenomenal amount of information. Practically everything factual the "compleat pediatrician" has to know is presented and arranged with lucidity. The spirit of psychiatry, of course, cannot be presented in Baedeker form and therefore the chapter about neuropsychiatry contains excellent neurology, but rather vague psychiatry. A fair test of the psychiatric understanding in a pediatrician is his attitude towards masturbation and toilet training. He can do so much harm and could be of so much benefit if he knows how to handle these two problems. The author's advice in these, as in any other psychiatric questions, is brief and pertinent, but frustratingly incomplete.

MARTIN GROTJAHN

CURRAN, DESMOND, AND GUTTMAN, ERIC: *Psychological Medicine, A Short Introduction to Psychiatry with an Appendix: War-Time Psychiatry.* Foreword by J. J. Conybeare. Baltimore, Williams and Wilkins Co., 1943, 188 pp.

This book is intended for the practitioner and tries to familiarize him with the more practical aspects of psychiatry. In the foreword, J. J. Conybeare states—and this statement can be wholeheartedly endorsed: "In these days, when time for study is limited and luggage space, at any rate for doctors in the forces, is even more limited, I feel that there is a place for such a book as this, which is for a work on psychiatry remarkably lucid, eminently practical, and light to transport. In the extremely useful "Appendix on War-Time Psychiatry" it is pointed out that one of the most important duties of the unit medical officer, whatever service he be in, is to take steps to rescue the individual before he breaks. Only too often by the time a man is referred to the psychiatrist he is past cure. Valuable time is often lost because of the "ruthless determination to exclude any possibility of physical disease." It is clearly better that the diagnosis of the occasional case of physical disease should be delayed rather than that large numbers of potentially useful men should be rendered hypochondriacs. A good unit medical officer who has the confidence of those under his care can often, by firmness, sympathy and common sense, prevent psychiatric disorders in the beginning. This book may give many of these medical officers the encouragement they need to exercise their psychiatric knowledge and gifts.

MARTIN GROTJAHN

SLAVSON, S. R.: *An Introduction to Group Therapy.* New York, The Commonwealth Fund, 1943, 352 pp. \$2.00.

For nearly 10 years the Jewish Board of Guardians of New York has sponsored an experiment in treating in groups selected cases of problem children. This book comprises a detailed description of the methods

used, the supervision of the group therapists, and the tentative formulations of psychodynamic principles and theory developed in this type of group therapy. The author, a psychoanalytically oriented educator, is director of the project and is clearly a modest, disciplined, and self-critical psychotherapeutic pioneer.

After a preliminary discussion of the principles and practice of group therapy, the author presents complete records of two group meetings, one of boys and one of girls. He then devotes separate chapters to the crucial problems of the choice of clientele, the problem of grouping and the function of the adult in relation to the group. Consideration of the therapeutic process in these group meetings is followed by complete case records of five typical cases so treated. Variations in group treatment form the subject of a final chapter.

Children selected for group therapy are brought into what they consider to be clubs in which there is a "permissive atmosphere" for play, work and social activity with others of not too dissimilar problems and under the passive, objective direction of an adult social worker. The psychodynamic factors of greatest importance are, first, that the adult tolerates all except the most destructive types of expression and remains neutral in relation to all members of the group and, second, that the interpersonal relationships of the children themselves become a significant vehicle for therapy. The method thus incorporates aspects of psychoanalysis (without interpretations), play therapy, occupational therapy and group work. For some this is the only type of treatment, for others it is an adjunct to case work, and for still others it supplements individual psychotherapy.

The criteria for selection of cases for group therapy emerge somewhat as follows: Group treatment is indicated for children inaccessible to individual therapy, for infantilized children, for children with pathologic sibling rivalry, for children showing overattachment to siblings, and for emotionally exploited children. It may be used as supplementary to individual treatment where there is initial parental opposition to case work, but no objection to a "club" or in situations where another member of the family is under treatment. Contraindications arise in very narcissistic children, sadistic children, children with a deep need for punishment, children who steal, overt homosexuals, orally aggressive children, homicidal children, or otherwise extremely aggressive children. The problem of grouping is discussed in terms of external factors such as the number in each group and the age span as well as in terms of the manifold personality traits of the children under treatment. Selections from case material appear in every chapter as well as in the one devoted to several very full accounts of children so treated.

This is an important book, and for several reasons. The shortage of trained psychiatric personnel has

stimulated efforts to develop methods of brief psychotherapy and group techniques among civilians and in the armed forces. Facilities for the treatment of problem children are notoriously inadequate, as the reviewer was recently reminded when he attempted to assist the wife of a naval officer place a nine-year-old fire-setter where adequate psychotherapy is available. Group methods are needed in public and private institutions, but even more for the majority of children who do not require institutionalization, the burden for whose care inevitably falls in large measure upon social agencies aided by their psychiatric consultants. For all who work with problem children this book will find a place alongside Aichhorn's *Wayward Youth* and, indeed, it should ultimately prove more valuable; whereas Aichhorn's results must be attributed predominately to his own intuitive genius, the methods of group therapy promise to become available for the training of many workers with a fair degree of passivity, objectivity, and psychological insight in relation to children and adolescents.

DOUGLASS W. ORR

DAVIS, JOHN E.: *Principles and Practise of Rehabilitation*. New York, A. S. Barnes Co., Inc., 1943, 192 pp. \$3.00.

It is the purpose of this book to present a workable psychology of rehabilitation of the mentally ill and represents a digest of experience in the rehabilitation of war veterans. Although written by a non-medie an attempt is made to correlate the viewpoints of the psychiatrist, psychologist and educator in attacking the common problem. A short statement of the impending size of this problem is followed by a chapter giving thumbnail summaries of psychiatric disease entities and dynamisms. The psychological approach consists of equally brief references to the available armamentarium of tests, the primary emphasis being on the pragmatic value of the latter as well as a cursory evaluation of results obtained in the psychoses. The fourth chapter is concerned with the viewpoint of the therapist-educator who is asked to realize that the element of "natural" interest in assigned tasks is of greater importance in the long run than is that of discipline, and admonishes him to prescribe adult activities for adults. The method of exploiting interest in the prescribed types of work is illustrated with case material, although the motivations of the patients are only superficially analyzed. The "how" of becoming a therapist is emphasized almost to the exclusion of "why." The final three chapters are concerned with defining and clarifying the therapeutic objective and demonstrate how the pace of the therapy is set by the preoccupied patient's sensory level of perception. An optimistic prognosis is advanced for the younger patient whose therapy may begin at a "lower sensory level" which includes the prescription of muscular work as well as certain of the less arduous handicrafts.

While there are several charts and tables to help clarify some of the material it is apparent that the author has more of practical value to offer than can actually be presented. It is to be regretted that not more actual case data is given. His primary thesis of treating the patient as an individual must unfortunately be constantly reiterated at this late date, and yet it is precisely in this reiteration that the book has its value. It is to be recommended for use in the training of non-medical therapists.

HERMAN SEROTA

GLUECK, SHELDON AND ELEANOR: *Criminal Careers in Retrospect*. New York, The Commonwealth Fund, 1943, 292 pp. \$3.50.

The subsequent behavior of young inmates of pen. I institutions is influenced far more by the attitudes of older, hardened incorrigibles than by the institutional chaplain, doctor, staff or director; "reformatories" do not reform; punishment is seldom a deterrent to further crime. These facts, and the conviction that "vengeance is a destructive and short-sighted emotional basis for coping with the biological and social problem of crime" led the authors for the past twenty years to explore the field of criminology in the hope of reaching some scientific basis for predicting "what happens to criminals and why." The Gluecks have studied in great detail the correlation between various background and personality factors (education, parental nativity, age at onset of delinquency, economic status, etc. etc.) on the one hand, and ultimate outcome on the other, the human material being some 500 reformatory alumni who have been closely investigated through these years.

As a result, the authors have constructed "predictive tables" which they suggest can be used "with sufficient accuracy to justify a fundamental change in existing sentencing and releasing procedures", supplanting the current hit, or miss, hunch, intuitive or other methods.

H. F. LANDER

SOURS, LOU A.: *Social Welfare and Narcotics*. Boston, Meador Publishing Co., 1943, 164 pp.

This little book, characterized in its subtitle as "A Manual for Teachers, Parents and Social Workers" gives in short chapters some facts about "narcotics," mainly alcohol and tobacco. The assembled historical, sociological, physiological and clinical data are quoted correctly. However, the selection and interpretation of the material is one-sided. Samples from the medical literature do not make it clear that certain of the experimental and clinical observations referred to by the author are highly controversial, to say the least. The whole treatment of the prohibition period provokes objections too numerous to be enumerated here. All this is in line with the general tendency of the publication which represents a plea for abstinence from narcotics couched in terms of reason (science as contrasted to morals). The

contention of the author, that only via education of the younger generation will a change of the general public's attitude towards "narcotics" be accomplished, is sound. One can fully agree with the criticism against the high pressure sales methods of the tobacco and alcohol manufacturers. But, in spite of these points made by the manual a one-sided orientation as offered here does not do justice to one of the oldest and most difficult sociological problems of human society. For this reason it does not seem likely that the publication will satisfy those who look for a basic arrangement of facts and figures in order to arrive at their own conclusions. On the other hand, the booklet may be utilized with profit by those whose minds have been made up beforehand through other and broader source material. To them it will prove a suitable and convenient guide for instructing juvenile and adolescent groups or individuals.

K. E. LANDÉ

MOORE, THOMAS VERNER: *The Nature and Treatment of Mental Disorders*. New York, Grune and Stratton, 1943, 312 pp.

Dom Thomas Verner Moore of the Catholic University of America gives in this book a short outline of psychiatry. Even on the first page, his attitude towards Freud and psychoanalysis is ambiguously described: "It was largely due to Freud and his students that modern psychiatry began to recognize the importance of understanding a patient from a psychological point of view. Unfortunately Freud and his followers made no attempt to develop a sound empirical psychology" (page 1). The same split attitude is repeated through the entire book: "Even the methods of psychoanalysis are good and useful; one can take exception, nevertheless, to the abuse of them by certain psychoanalysts." . . . ". . . when Freud says that he cannot spare his patients the task of listening to his criticism of moral principles it shows that he himself has assumed the role of mentor but as a guide to evil and not to good." A few case histories illustrate how the author uses certain selected parts of analytic theory and technique in the treatment of his patients.

MARTIN GROTHAAN

The Role of Nutritional Deficiency In Nervous and Mental Disease. Association for Research In Nervous and Mental Disease. Baltimore, The Williams and Wilkins Company, 1943, 228 pp.

This book is divided into 2 parts: (1) Contributions from the Fundamental Sciences and (2) Clinical Aspects. In the first part George R. Cowgill in contributions of physiological investigations indicates the breadth of the field and criteria of significance in experiments. The experimental diet should consist of highly purified ingredients of known chemical composition. The possibility should always be entertained that the condition being studied represents a multiple instead of a single deficiency, especially in

human beings. There is need for conservatism in translating the results obtained in one species to another species, and it is necessary to institute the inanition control.

In a short review of the relationship of enzymes to deficiency, C. A. Elvehjem concludes that certain vitamins may be constituent parts of certain enzymes and that these enzymes show a significant decrease during deficiency diseases. George R. Minot in an abstract of the problem of nutritional deficiencies states that the prevention of nutritional disease is better through the butcher and the grocery store than it is through the chemist and the apothecary store. The vitamins B₁, nicotinic acid amide, riboflavin, pantothenic acid and vitamin B₆ are necessary for prevention of degenerative changes in the central nervous system according to Harold E. Himwich.

H. M. Zimmerman contributes an excellent chapter on the description of the nervous system lesions seen in the human B-avitaminoses with their etiologic interpretation based on animal experimentation. This includes lesions of the peripheral nerves, the spinal cord and the brain. The effects of vitamin E deprivation on mice, herbivora, dogs, chicks, ducks, turkeys and pigeons lead A. M. Pappenheimer to conclude that in most of the species studied, vitamin E is essential for the integrity of the skeletal muscles.

It is difficult to evaluate the report of Russell M. Wilder on Symptoms and Signs of Thiamine Deficiency. It would seem that the selection of subjects from the female inmates of a psychopathic hospital was not a happy one. With such a background one might well doubt the specific relationship between emotional reactions and the restriction of thiamine. W. H. Sebrell, in the mental and neurological aspects of Vitamin B complex deficiency, relates the most prominent neurological changes to thiamine deficiency while he suggests that the most prominent mental changes are due to nicotinic acid deficiency. This attempt to correlate complex neuropsychiatric entities with simple substances would seem premature.

Spies and his associates indicate that symptoms of emotional behavior may occur as the only manifestations of a deficiency state, and that such emotional disturbances may respond to specific vitamin therapy. The differentiation of nutritional polyneuritis from other multiple neuritides is described by Maurice B. Strauss. Adolf Meyer, in discussing W. B. Castles' short note on pernicious anemia and allied disorders challenges the idea of relating this to a deficiency process. Bowman and Wortis give an excellent review of psychiatric syndromes caused by nutritional deficiency. According to James S. McLester, the cure of nutritive deficiency is dependent upon (1) an abundance of good food in addition to vitamin concentrates, (2) more than one essential substance is needed because nutritive deficiency is almost always multiple, (3) crude liver extract, given intramuscularly, especially in the treat-

ment of mixed vitamin deficiencies and (4) enormous amounts of vitamines in the pure crystalline form or as concentrates.

In the introduction, the editors call attention to the inaccurate usage of psychiatric terminology in contrast to the employment of more precise neurological terminology. A chapter devoted to those psychological factors which may lead to nutritional deficiency would have helped to round out this instructive volume.

JOSEPH J. MICHAELS

BOOK NOTES

ABRAMSON, HAROLD A., MOYER, LAURENCE S., GORIN, MANUEL H.: *Electrophoresis of Proteins and the Chemistry of Cell Surfaces*. New York, Reinhold Publishing Corporation, 1942.

An excellent treatise on a relatively recent development in the physical chemistry of proteins and its application to clinical medicine. This volume deals with a very specialized aspect of interest primarily to the biochemist.

I. ARTHUR MIRSKY

BAKER, HARRY J.: *Introduction to Exceptional Children*. New York, The Macmillan Company, 1944, 493 pp.

There is nothing exceptionally good in this academic, schematized description of physically and mentally handicapped children. The factual details do not fill the almost emphasized lack of psychological understanding.

MARTIN GROTHAHL

BEARD, HOWARD H.: *Creatine and Creatinine Metabolism*. Brooklyn, Chemical Publishing Co., 1943.

Many advances in knowledge relative to this subject have been due, in good measure, to the experimental studies of the author of this volume. In summarizing what was at one time a most controversial subject, he has emphasized the results of more recent investigations and has correlated experimental data with other aspects of human metabolism as well as with various clinical disturbances such as diseases of the heart and muscle.

I. ARTHUR MIRSKY

BOCHNER, RUTH; HALPERN, FLORENCE; AND BOWMAN, KARL M.: *The Clinical Application of the Rorschach Test*. New York, Grune and Stratton, 1942.

The present volume represents the work of a number of years of study and application of the Rorschach test at the Bellevue Psychiatric Hospital. The authors present their material in simple, clear and readable form. Twenty records given in detail should be of special help for people using or learning to use this test.

MARTIN GROTHAHL

EMERSON, WILLIAM R. P.: *Health for the Having. A Handbook for Physical Fitness*. New York, The Macmillan Company, 1944.

Dedicating this book "to the thousands of our youth whose greatest disappointment has been their rejection for active duty in all branches of our armed forces because of physical unfitness" the author advises the development of good "health-habits" which consist mainly in watching the weight chart and taking careful nourishment.

MARTIN GROTHAHL

HAM, ARTHUR W., AND SALTER, M. D.: *Doctor in the Making. The Art of Being a Medical Student*. Philadelphia, J. B. Lippincott Co., 1943.

It is the authors' intention to teach prospective medical students the "right" road to learning. Perhaps the level of prospective medical students is really the level of well-meaning children who must be told how to behave. But not even such children can be taught much by rules (as for instance in the chapter "Do's and Don'ts" page 170) and without being given an understanding of the underlying psychodynamics of medicine.

MARTIN GROTHAHL

HULL, CLARK L.: *Principles of Behavior. An Introduction to Behavior Theory*. New York, D. Appleton-Century Company, 1943.

The primary or fundamental, molar principles of behavior are presented in an objective, systematic manner. This book has been written on the assumption that all behavior, individual and social, moral and immoral, normal and psychopathic, is generated from the same primary laws; that the differences in the objective behavioral manifestations are due to the differing conditions under which habits are set up and function. It is a general introduction to the theory of all the behavioral sciences.

MARTIN GROTHAHL

INGRAM, MADELENE ELLIOTT: *Principles of Psychiatric Nursing*. Foreword by Ross McC. Chapman. Philadelphia and London, W. B. Saunders Co., Second Edition, 1944, 511 pp.

Written for the undergraduate student nurse, this book presents a vast amount of practical information. Of special delight to the sceptical student of unconscious motivation in nursing are some illustrations showing the commando technique for "active" patients, taken from W. E. Fairbairn's book, "Get Tough—How to Win in Hand to Hand Fighting."

MARTIN GROTHAHL

JACOBI, JOLAN: *The Psychology of Jung. An Introduction with Illustrations*. Foreword by C. G. Jung. New Haven, Yale University Press, 1943.

This book is a faithful translation of the German original, as reviewed in detail by Edward Weiss in this journal (Volume V No. 1).

MARTIN GROTHAHL

LICHTWITZ, LEOPOLD: *Pathology and Therapy of Rheumatic Fever*. New York, Grune & Stratton, 1944.

This volume is devoted to the thesis that rheumatic fever is an allergic response on the part of various mesenchymal tissues to a variety of proteins; that an "inadequate" autonomic nervous system is present in susceptible subjects so that normal integrations do not occur in response to the antigen sensitization. An interesting admixture of fact and fancy is presented in support of the thesis. However, too frequently it is difficult to discover whether the author is discussing rheumatic fever or rheumatoid arthritis. The emphasis on the role of the nervous system in the rheumatic fever syndrome is merited, since this aspect of the syndrome is too frequently disregarded.

I. ARTHUR MIRSKY

PACE, D. M., AND KIMURA, K. K.: *Laboratory Manual for Vertebrate Physiology*. Lincoln, The University of Lincoln, Nebraska, 1943.

A manual of laboratory exercises in physiology.

I. ARTHUR MIRSKY

Psychology through Literature, An Anthology.

Edited by Caroline Shrodes, Justine Van Gundy and Richard W. Husband. New York, Oxford University Press, 1943.

In an uncanny, almost frightfully lifeless show of literary waxworks, the creations of our greatest poets are collected and put up on a psychopathological exhibition. The authors, like guides in a sideshow, point out what is to be seen: the formation of the personality by physical heritage; by influence of the family; social and economic pressure, emotional conflicts. Part two illustrates adjustment and maladjustment of the personality, dreams, neuroses and psychoses. The anthology is composed from quotations of the works of Maugham, Shakespeare, Saroyan, Proust, Dreiser, Roland, Tolstoy, Rousseau, Huxley, Joyce, Flaubert, Lawrence, Maupassant, Dostoyevsky, and many others.

MARTIN GROTHAAN

ROHEIM, GEZA: *The Origin and Function of Culture*. New York, Nervous and Mental Disease Monographs, 1943.

Three essays: "The Problem of Growing Up," "Economic Life," and "Sublimation and Culture," form a connected whole and are an attempt to explain civilization or culture "as manifestations of the Eros."

Sigmund Freud's "Civilization and Its Discontents" is an explanation why man is discontented in civilization, while the present essays are an attempt to give an answer to the question as to why and how civilization originated. In the field of biological factors, a prolonged infancy and an inborn trend to maturation is assumed. The well-known peculiarities of the author's style do not make the book easy reading.

MARTIN GROTHAAN

RIGLER, LEO G.: *Outline of Roentgen Diagnosis. An Orientation in the Basic Principles of Diagnosis by the Roentgen Method*. 2nd ed. Philadelphia, J. G. Lippincott Co., 1943. 338 pp.

This book succeeds admirably in fulfilling its objective; namely, that of a brief outline of Roentgen diagnosis. It should be most helpful as a ready source of well established roentgenologic signs in the usually encountered diseases. The information is presented in a laudably concise and easily understood manner. Long dissertations on minor, controversial details of possible interest especially to roentgenologists are deliberately avoided. The detailed index permits ready access to the contained material.

A. BACHMAN

SALTER, ANDREW: *What is Hypnosis? Studies in Auto and Hetero Conditioning*. New York, Richard R. Smith, 1944.

Without convincing or new facts, an attempt is made to explain hypnosis according to Pavlov's theories as a "general inhibition" analogous to a conditioned reflex. This results in some new formulations, but no new insight into the underlying psychodynamic principles of hypnosis seems to be gained.

MARTIN GROTHAAN

SEASHORE, C. E.: *Pioneering in Psychology*. Iowa City, University of Iowa Press, 1942, 232 pp.

Dean Seashore belongs to that generation of psychologists that trained in the tradition of Wundt's psychology. From this beginning, Seashore has played an active role in fostering research of constantly broadening horizons and applying the results of such research to community service. *Pioneering in Psychology* is not a history of American psychology, but rather a recounting of its development at Iowa University under the author's influence as head of the Psychology Department and Dean of the Graduate School. There is little in the text that has bearing on the problems of psychosomatic medicine, but there is considerable interesting information about the utilization of academic research for the benefit of "normal" people.

JAMES E. BIRREN

STEWART, ISABEL MAITLAND: *The Education of Nurses*. New York, The Macmillan Company, 1943, 399 pp.

Designed primarily for students and workers in the field of nurse education, this book will also give an introduction to "non-nursing groups," as the author calls them, who are becoming increasingly interested in this branch of education. A history of the past and an evaluation of present trends is given.

MARTIN GROTHAAN

TALIAFERRO, WILLIAM H.: *Medicine and the War*. Chicago, The University of Chicago Press, 1944.

Ten lectures given by members of the biological sciences to students of the University of Chicago discuss the importance of medicine in modern war-

fare. The topics range from chemotherapy, malaria, shock and blood substitutes to aviation medicine, psychiatry and chemical warfare.

MARTIN GROTHAAN

VANDYKE, H. B. ET AL.: *Hormones of the Pituitary Body*. Lancaster, Rudesell & Smith, 1943.

The symposium which formed the basis of this monograph was concerned with discussions of isolation and purification of the various hormones of the pituitary gland. The seven papers are authoritative and point toward definite progress.

I. ARTHUR MIRSKY

BOOKS RECEIVED

BECK, S. J.: *Rorschach's Test*. New York, Grune & Stratton, 1944.

CASTALLO, MARIO A.: *Expectantly Yours*. New York, Macmillan Company, 1944.

DAVIDOFF, L. M., AND DYKE, C. G.: *The Normal Encephalogram*. Philadelphia, Lea & Febiger, 1942.

HOFFMAN, JACOB: *Female Endocrinology*. Philadelphia, W. B. Saunders Co., 1944.

Hospital in Modern Society. Edited by Arthur C. Bachmeyer and Gerhard Hartman. New York, The Commonwealth Fund, 1943.

LEVY, DAVID MORDECAI, *Maternal Overprotection*. New York, Columbia University Press, 1943.

MACKINTOSH, JAMES M.: *The War and Mental Health in England*. New York, The Commonwealth Fund, 1944.

MAY, MARK: *Social Psychology of War and Peace*. New Haven, Yale University Press, 1944.

McCOMBS, ROBERT PRATT: *Internal Medicine in General Practice*. Philadelphia, Saunders, 1943.

MORGAN, CLIFFORD T.: *Physiological Psychology*. New York, McGraw-Hill Book Co., Inc., 1943.

New Goals for Old Age. Edited by George Lawton. New York, Columbia University Press, 1943.

One Hundred Years of American Psychiatry. Published for the American Psychiatric Association. New York, Columbia University Press, 1944.

Personality and the Behavior Disorders. Vols. I & II. Edited by J. McV. Hunt. New York, The Ronald Press, 1944.

Principles and Practise of Industrial Medicine. Edited by Fred J. Wampler. Baltimore, Williams & Wilkins Co., 1943.

READ, GRANTLY DICK: *Childbirth Without Fear*. New York, Harper's, 1944.

YERKES, ROBERT: *Chimpanzees*. New Haven, Yale University Press, 1944.

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